



MICHAEL FARADAY  
1791-1867

One of the greatest electrical scientists of all time. Among his major discoveries and inventions: the first electrical generator, a rudimentary motor and transformer, electrical induction, the laws of electrolysis, and electromagnetic field theory. The fundamental unit for capacitance, the farad, is named after him.



SAMUEL F.B. MORSE  
1791-1872

Samuel Finley Breese Morse  
1791-1872

"What hath God wrought?" With this message, transmitted in 1844 in a code devised by Morse, over a telegraph line he built between Baltimore and Washington, the era of electrical communications was launched.



CHARLES BABBAGE  
1792-1871

Charles Babbage  
1792-1871

The grandfather of the modern computer. He developed the basic principles by which today's computers operate and demonstrated them using mechanical devices.



LORD KELVIN  
1824-1907

Lord Kelvin (William Thomson)  
1824-1907

A contributor to numerous fields of science, his work led to advancements in the fundamental theory of electricity and in measurements. His analysis of cable propagation and improvements in cable design and galvanometers helped make the first Atlantic cable possible.

(AIEE Honorary Member, 1892)

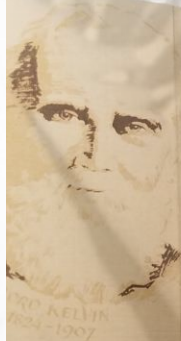


JAMES CLERK MAXWELL  
1831-1879

James Clerk Maxwell  
1831-1879

The development of electromagnetic theory was his crowning work, although he contributed importantly to other areas of science. His elegant equations relating electric and magnetic fields are still in use today.





William Thomson (Kelvin)  
1824-1907

Professor of natural philosophy at Glasgow University, his work led to advances in the fundamentals of electricity and in the theory of heat. His analysis of the propagation of electromagnetic waves helped make the radio possible.  
(AIEE Charter Member, 1892.)



James Clerk Maxwell  
1831-1879

The development of electromagnetic theory was his crowning work, although he contributed importantly to other areas of science. His elegant equations relating electric and magnetic fields are still in use today.



Thomas Alva Edison  
1847-1931

A truly self-made man and prolific inventor, holder of 1093 patents. Among his many well-known inventions: quadruplex telegraphy, a practical incandescent light and a generating and distribution system for it, the phonograph, an improved telephone transmitter, motion pictures, a stock ticker.

(AIEE Charter Member, AIEE Honorary Member, 1928.)



Alexander Graham Bell  
1847-1922

Acknowledged as the inventor of the telephone, which he patented in 1876. His demonstration of the telephone was one of the great moments in the history of communications. The unit bel, more commonly expressed as the decibel, is derived from his name.

(AIEE Charter Member, AIEE President, 1891-92; Edison Medalist, 1914.)



Nikola Tesla  
1857-1943

Inventor of the induction motor and proponent of alternating current electrical systems. His later work included extraordinary investigations of high-frequency and high-voltage phenomena and efforts to achieve wireless transmission of power by induced distortion of the earth's magnetic field.

(Edison Medalist 1916.)



Charles Proteus Steinmetz  
1865-1923

Developer of efficient methods for analyzing alternating circuits using complex quantities. He did extensive theoretical and experimental work on magnetic hysteresis and granted 195 patents for electrical inventions.

(AIEE President, 1901.)

МУЗЕЙ НИКОЛЕ ТЕСЛЕ

НИКОЛА ТЕСЛА - ЖИВОТ И ДЕЛО



NIKOLA TESLA  
1857-1943

Inventor of the induction motor and proponent of alternating-current electrical systems. His later work included extraordinary investigations of high-frequency and high-voltage phenomena and efforts to achieve wireless transmission of power by induced distortion of the earth's magnetic field.  
(Edison Medalist 1916.)



CHARLES P. STEINMETZ  
1865-1923

Developer of efficient methods for analyzing alternating-current circuits using complex quantities. He did extensive theoretical and experimental work on magnetic hysteresis and was granted 195 patents for various electrical inventions.

(AIEE President, 1901-1902)



LEE DE FOREST  
1873-1961

Inventor of the triode vacuum tube. By inserting a grid in the diode tube, he created a device capable of amplification and oscillation which led to the development of the electronics industry.

(IRE Charter Member; Medal of Honor Recipient, 1922; IRE President, 1930; Edison Medalist, 1946.)



GUGLIELMO MARCONI  
1874-1937

The first to transmit radio signals over long distances. In 1896 he sent signals a mile and in 1901 he succeeded in transmitting across the Atlantic, an accomplishment for which he received the Nobel Prize.

(AIEE Honorary Member, 1917; Medal of Honor Recipient, 1920.)



JOHN VON NEUMANN  
1903-1957

Applied his great mathematical abilities to the development of giant computers. He also did important work in many branches of advanced mathematics, particularly in quantum mechanics.



СРПСКА АКАДЕМИЈА  
НАУКА И УМЕТНОСТИ

\*

МУЗЕЈ НАУКЕ И ТЕХНИКЕ

\*

МУЗЕЈ НИКОЛЕ ТЕСЛЕ

\*

ГРАДСКИ МУЗЕЈ СУБОТИЦА

ИМАЈУ ЧАСТ ДА ВАС ПОЗОВУ  
НА ОТВАРАЊЕ

**ИЗЛОЖБЕ**

**НИКОЛА ТЕСЛА - ЖИВОТ И ДЕЛО**

У среду, 22. марта у 12 сати

Изложбени простор Музеја  
(Градска кућа I спрат)

Генерални спонзор:  
ЕПС Електроводина  
ЕД "Суботица"

SRPSKA AKADEMIJA  
NAUKA I UMETNOSTI

\*

MUZEJ NAUKE I TEHNIKE

\*

MUZEJ NIKOLE TESLE

\*

GRADSKI MUZEJ SUBOTICA

ИМАЈУ ЧАСТ ДА ВАС ПОЗОВУ  
НА ОТВАРАЊЕ

**IZLOŽBE**

**NIKOLA TESLA - ŽIVOT I DELO**

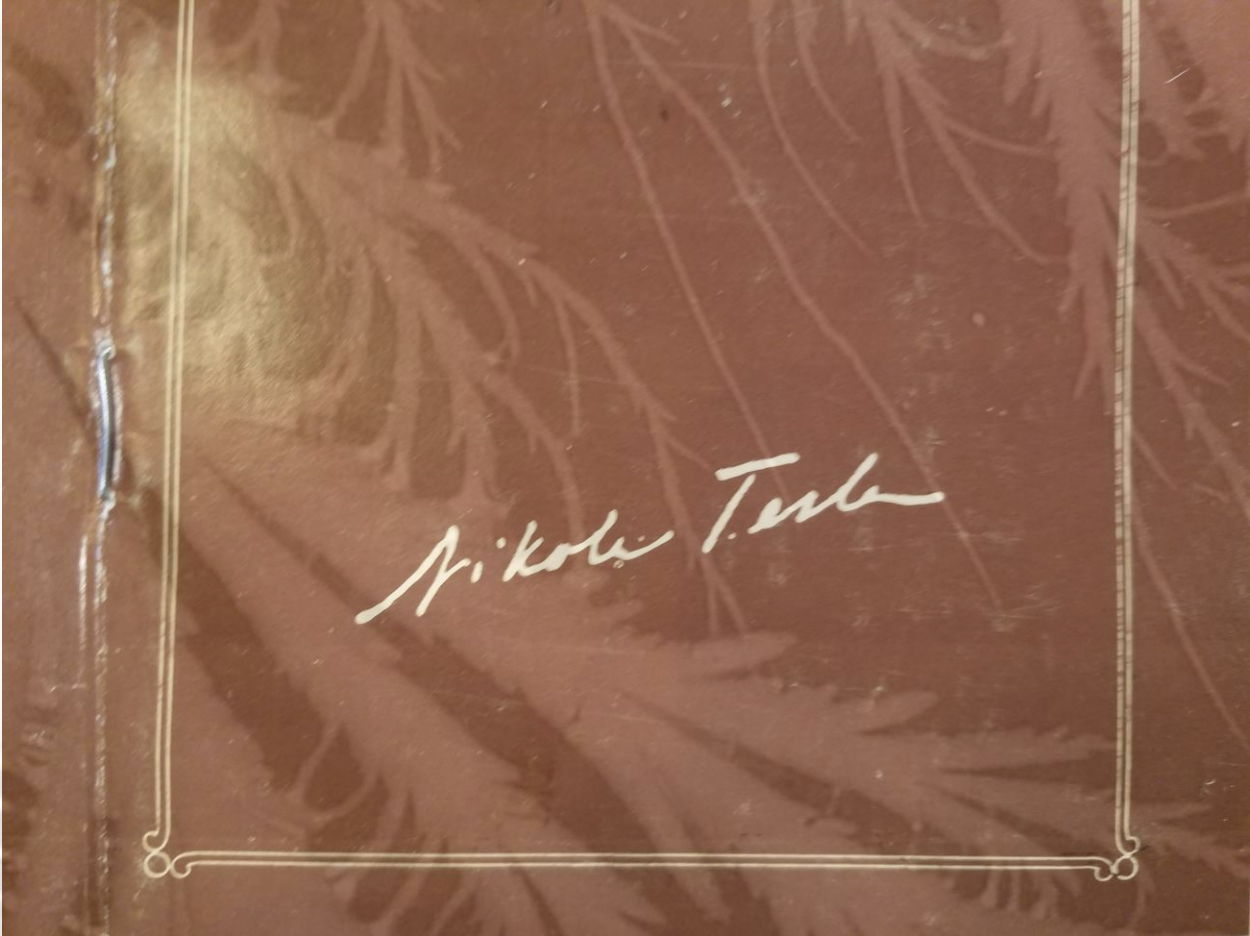
U sredu, 22. marta u 12 sati

Izložbeni prostor Muzeja  
(Gradska kuća I sprat)

Generalni sponzor:  
EPS Elektrovojvodina  
ED "Subotica"







*Nikola Tesla*



Tesla je prijavio 40 patenata iz oblasti polifaznih sistema. 1888. g. drži svoje prvo predavanje „Novi sistem motora i transformatora naizmenične struje“ pred Američkim Institutom elektrotehničkih inženjera.

Iste godine Džordž Vestinghaus, industrijalac, otкупљуje pravo na korišćenje Teslinih patenata i počinje sa proizvodnjom motora. Pronalazak polifaznog sistema došao je do punog izražaja pri podizanju hidrocentrale na vodopadima Nijagare. Izgradnja je trajala od 1891 – 1896. g. kada su svi agregati pušteni u rad.

Devedestih godina prošlog veka Tesla počinje sa radom u oblasti visokofrekventnih struja. Tokom 1891. g. prijavljuje niz patenata iz oblasti proizvod enja struje visokih učestanosti i visokih napona. Iste godine podnosi patentnu prijavu za uređaj poznat pod nazivom „Teslin transformator“. Razne varijante oscilatora pojavljuju se u Teslinim patentima sve do 1896.g. Rezultate svojih radova na području visokofrekventnih struja izložio je u predavanjima između 1891 i 1893.g. Od 1897.g. sledi niz patenata iz oblasti radiotehnike. 1898. g. konstruiše brod sa bežičnim upravljanjem.



CONDENSATOR TRANSFORMER

WIRELESS MOTOR

TELAUTOMATOR

STEAM & GAS TURBINE

**NIKOLA TESLA COMPANY**

8 West 40th St.  
TEL. 9090 BRYANT  
NEW YORK

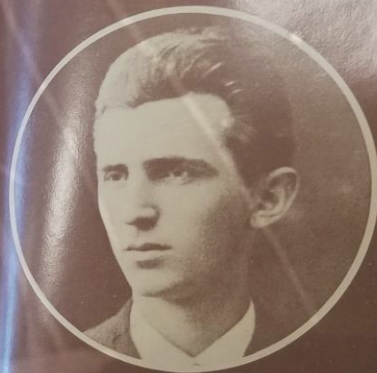
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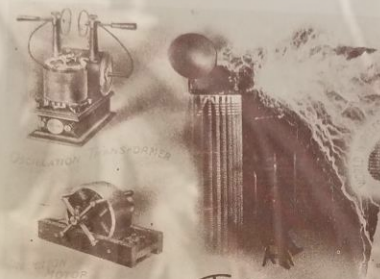
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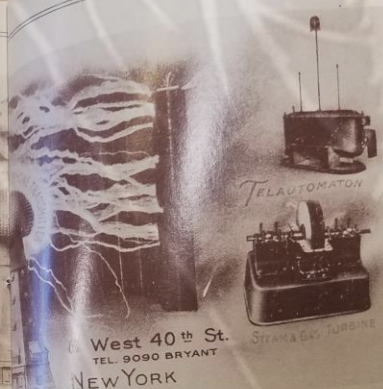
Sa idejom je slično kao sa omamljujućom visinom na koju se penjete: isprva stvara nelagodnost i vi se bojite da ćete pasti, sumnjajući u sopstvene snage; ali, uskoro, udaljenost meteža života i uticaj visine na koji pobuđuje hrabrost i oduševljenje, umiruje vašu krv; vaši koraci postaju čvrsti i sigurni i vi počinjete da vidite – zadržavajuće visoko.





## NIKOLA TESLA COMPANY

Tesla je dolazio u domovinu dva puta. Prvi put, bilo je to 1889. g., posle razgledanja Svetske izložbe u Parizu. Početkom februara 1892. g., Tesla dolazi u Evropu i drži predavanja u Londonu i Parizu. Na poziv iz domovine, zbog bolesti majke, otkazuje pozive za predavanja u drugim evropskim gradovima i dolazi u Gospić. Posećuje Zagreb, gde govori o mogućnosti elektrifikacije pomoću sistema naizmeničnih struja. Preko Budimpešte stiže u Beograd, u junu 1892. g., gde, u zgradi Kapetan Mišinog zdanja, drži predavanje o svojim pronalascima.



West 40<sup>th</sup> St.  
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NEW YORK

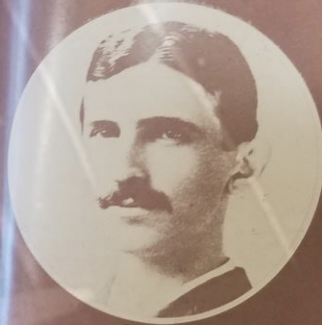
Tokom 1881 i 1882. godine Tesla boravi i Budimpešti gde radi u telefonskom društvu. Ovo zaposlenje daje mu velike mogućnosti da dokaže svoje pronalazačke sposobnosti. Usavršio je aparat za pojačanje glasa, koji nikad nije patentirao ili objavio. Tu, u Budimpešti, potaknut Geteovim stihovima, dolazi do genijalnog principa obrtnog magnetnog polja.



Već tone sunce, zamire već dan  
Al' ono drugde novi život stvara  
O, imati krila – moj je davni san,  
O, leteti za lepotom toga žara!

Da dlvna snal' al' sunce zapada  
Al', čovek ima krila duhovna  
Al' telesna ne. Bozi nisu dali!"  
(Gete „Faust“)

**K**ad sam izgovorio ove reči inspiracije ideja  
me ozarila kao bljesak munje... Hiljadu tajni  
prirode na koje sam se slučajno spoticao  
dao bih za ovu koju sam slučajno iščupao  
iz Prirode uprkos svim čudima i opasnostima  
s kojima sam se suočavao\*

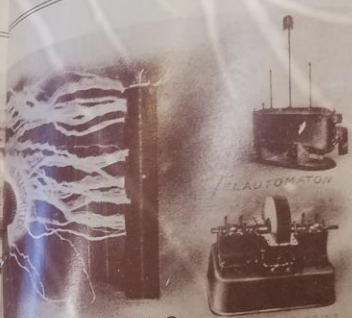




## NIKOLA TESLA COMPANY

Posle boravka u Budimpešti, Tesla odlazi u Pariz gde kratko vreme radi za Edisonovo kontinentalno društvo koje je bilo ogranak istoimenog Društva u Njujorku.

Posle Pariza radi u Strazburu, gde je 1883.g. prvi put praktično proverio princip obrtnog magnetnog polja – konstruisao je prvi model indukcionog motora. Bezuspešno je pokušavao da zainteresuje evropske stručnjake i nađe sredstva za realizaciju svojih ideja. Kako za njegov rad nije bilo dovoljno sluha, Tesla se odlučuje za odlazak u Ameriku. Na tle Novog sveta stigao je juna 1884. g.



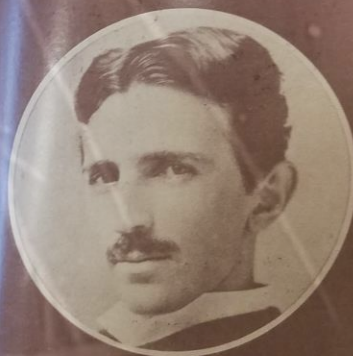
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NEW YORK

Kraće vreme radi kod Tomasa Edisona koji je za sobom već imao brojne patente, ali nije bio zainteresovan za Teslin sistem naizmeničnih struja. 1885.g. Tesla osniva svoju prvu kompaniju „Tesla Arc Light Co“ u cilju razrađivanja sistema lučnog osvetljenja. Osnivanjem kompanije „Tesla Electric Co“ 1887.g., konačno dolazi do materijalnih mogućnosti za realizaciju političnog sistema proizvodnje, prenošenja i korišćenja električne energije. Od tada patenti počinju da se nižu vrtoglavom brzinom.



*Moj je život bio neprestano treperenje  
između agonije neuspeha i blaženstva  
uspeha"*

*„Biti sam, to je tajna otkrića; Biti sam, to je  
čas kada se ideje rađaju.“*





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Imamo mnoge spomenike prošlih vremena,  
imamo dvorce i piramide, hramove Grčke i  
katedrale hrišćanskog sveta. U njima je  
overodostojena snaga ljudi, veličina nacija,  
ljubav prema umetnosti i predanost religiji.  
Ovaj spomenik na Nijagari, pak, ima nešto  
svoje osobeno, u većem skladu sa današnjim  
mišljenjem i htenjima. To je spomenik  
dostojan našeg doba nauke, istinski  
spomenik prosvetiteljstva i mira.





Da bi nesmetano radio 1899. g. odlazi u Kolorado, gde gradi eksperimentalnu laboratoriju. Eksperimentiše sa strujama visokih učestanosti i napovima od nekoliko miliona volti, ostvaruje bežičnu telegrafiju na daljinu od preko 1000 km. Oduševljen novim otkrićima, 1901. g. podiže veliku „svetsku radiostanicu“ na Long Islandu i radi na ostvarivanju ideje o povezivanju svetskih komunikacija u jedinstveni sistem. Započete radove nije dovršio usled nedostatka materijalnih sredstava.



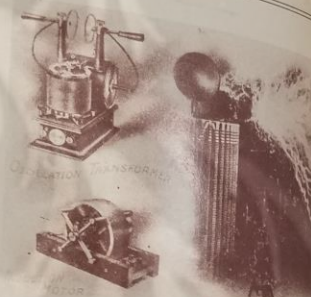
Od 1905. g. Tesla podnosi patente iz oblasti turbina, pumpi, fluidike, gromobrana, merača protoka i brzine. Uprkos želji da sa novim patentima obezbedi sredstva za nastavak radova na Long Islandu, ne uspeva i njegov život postaje sve teži. Poslednje patente daje u oblasti avijacije.



Stvaralac je bio taj što je probudio onaj nepatvoreni čovekoljubivi duh, koji je čak i u stara vremena varničio kroz učenja vrsnih reformatora i filozofa, onaj duh koji ljudi unose u svaku vrstu rada bez obzira na struku i položaj – ne toliko zbog materijalne koristi ili naknade – već prvenstveno radi uspeha, radi zadovoljstva koje pruža postizanje uspeha, i zbog dobra koje su time u stanju da pruže svojim bližnjima.

Svojim žarom ova vrsta ljudi danas ide napred, gonjena dubokom ljubavlju za svoje učenje, ljudi koji čine čuda na svojim poljima rada, čiji je osnovni cilj i zadovoljstvo da sakupljaju i šire znanje, ljudi koji gledaju daleko iznad zemaljskih stvari – njihov je simbol „Excelsior“!

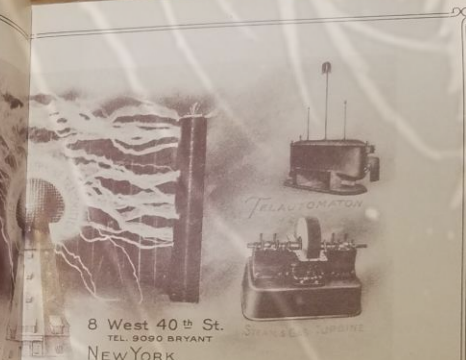




## NIKOLA TESLA COMPANY

Za svoj rad Tesla nije želeo priznanja. I pored ovakvog svog stava dobio je brojna priznanja naučnog sveta: Edisonova i Džon Skotova medalja, počasni doktorati Univerziteta u Pragu, Beču, Grenoblu, Poatjeu, Gracu, Parizu, Jelskog Univerziteta, Univerziteta u Beogradu, Zagrebu, članstvo u Britanskom Kraljevskom Institutu, Srpskoj akademiji nauka.

1960. g. ustanovljena je, u Međunarodnom sistemu mera, jedinica za magnetnu indukciju – Tesla (T).

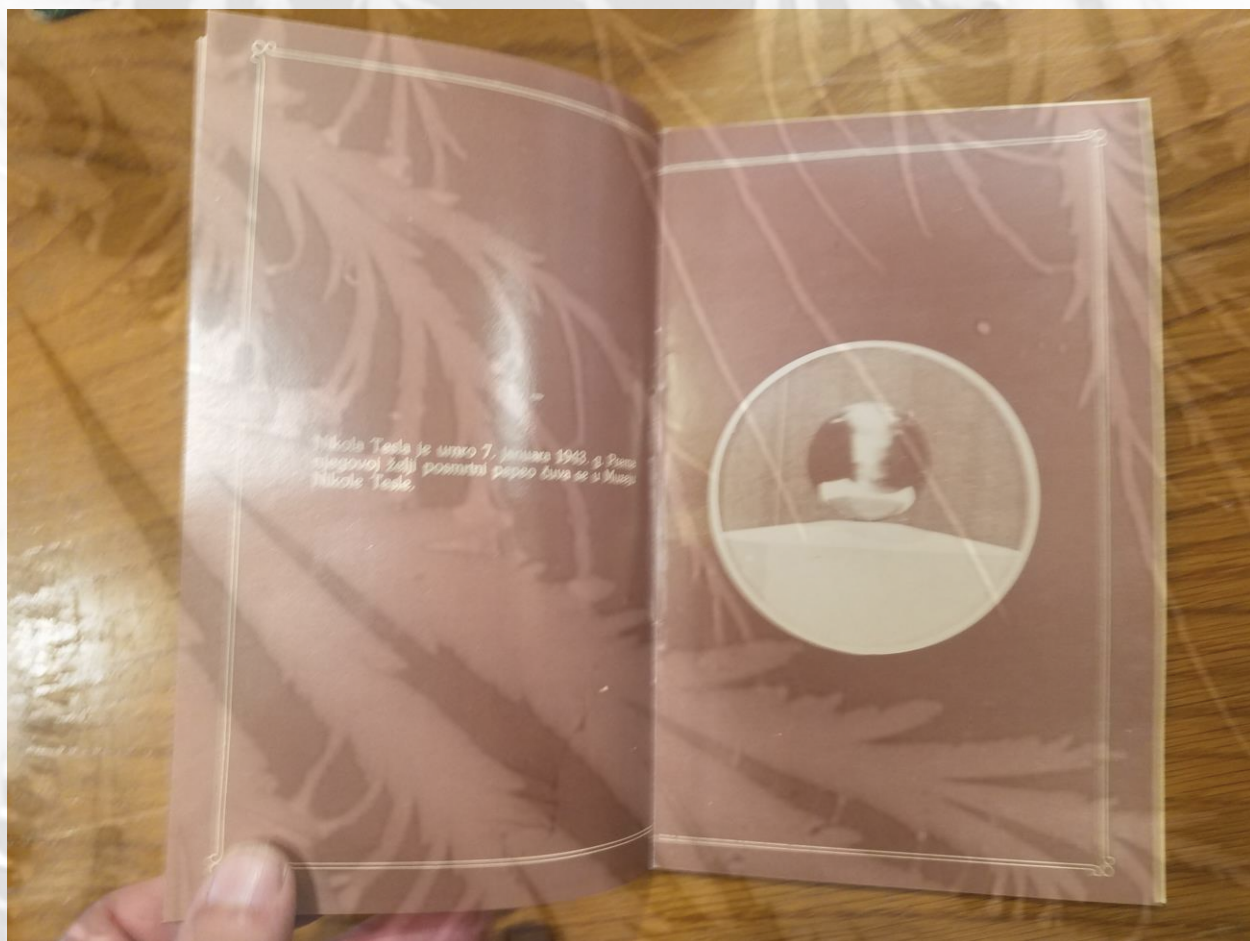


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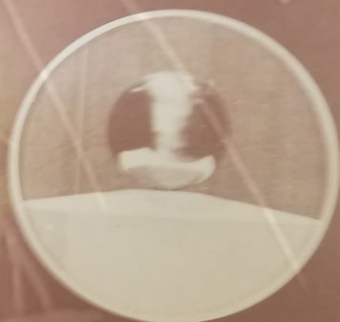
Nikola Tesla je rođen 10. jula 1856. godine u selu Smiljanu, u Lici, u porodici pravoslavnog sveštenika.

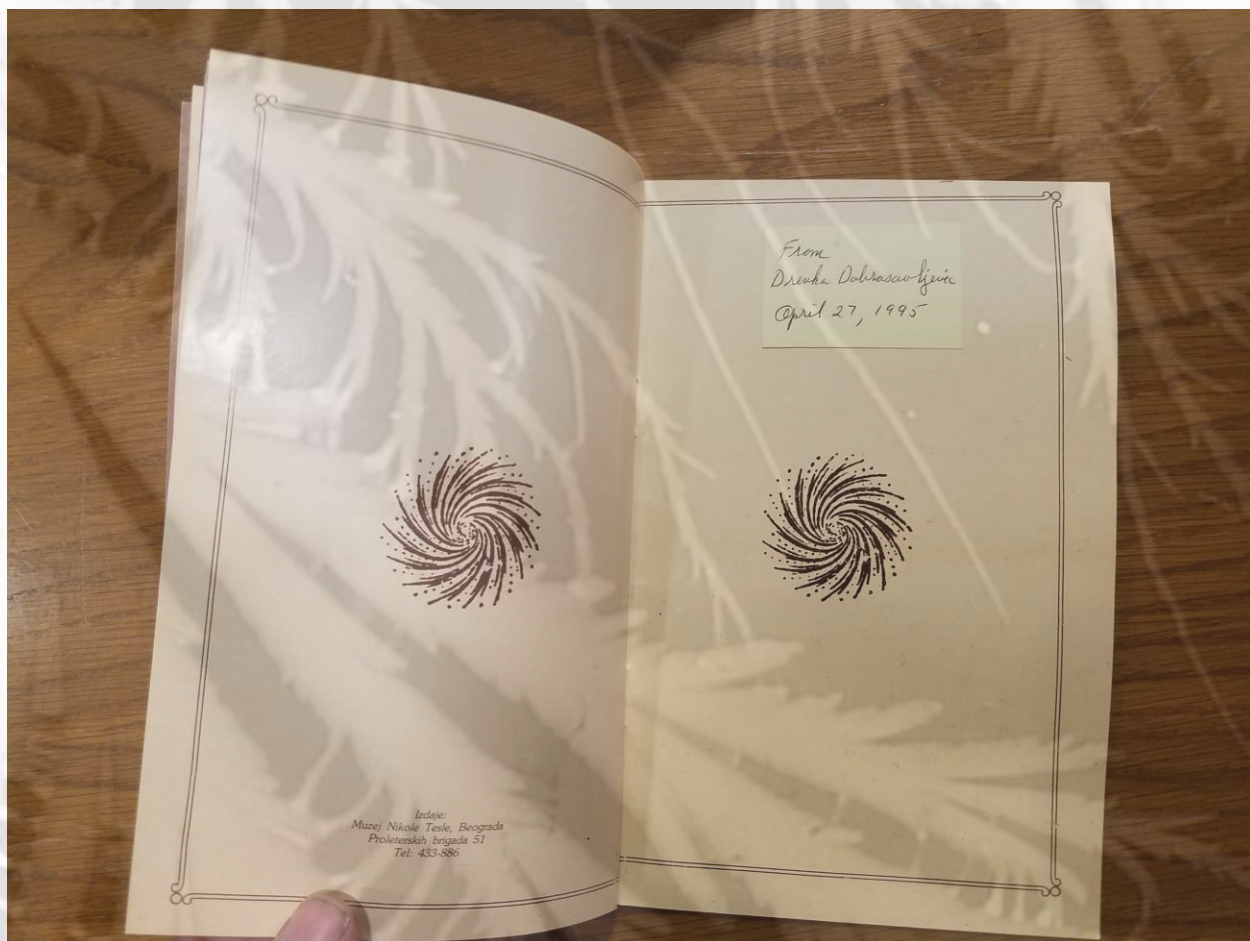
U periodu 1862 – 1864 pohađa osnovnu školu i nižu gimnaziju u Smiljanu i Gospiću, a višu Gimnaziju u Karlovcu. Maturira 1873. godine. Od 1875 – 1878. g. studira na Visokoj tehničkoj školi u Gracu, a zatim od 1880 – 1881. g. nastavlja studije na Karlovom Univerzitetu u Pragu.





Никола Тесла је умро 7. јануара 1943. г. Поне-  
многови још поштују папире његове и музеј  
Николе Тесле.





From  
Drenka Dobrosavljevic  
April 27, 1995

Indaje:  
Muzej Nikole Tesle, Beograda  
Proleterskih brigada 51  
Tel. 433-8865



STANLEY WOLDER  
*Counsellor at Law*

521 FIFTH AVENUE  
NEW YORK 17, N. Y.  
MURRAY HILL 7-3233

September 17, 1965

The Tesla Society  
P. O. Box 4058  
Minneapolis, Minnesota 55414

Att: Mr. Leland I. Anderson,  
Secretary

Dear Mr. Anderson:

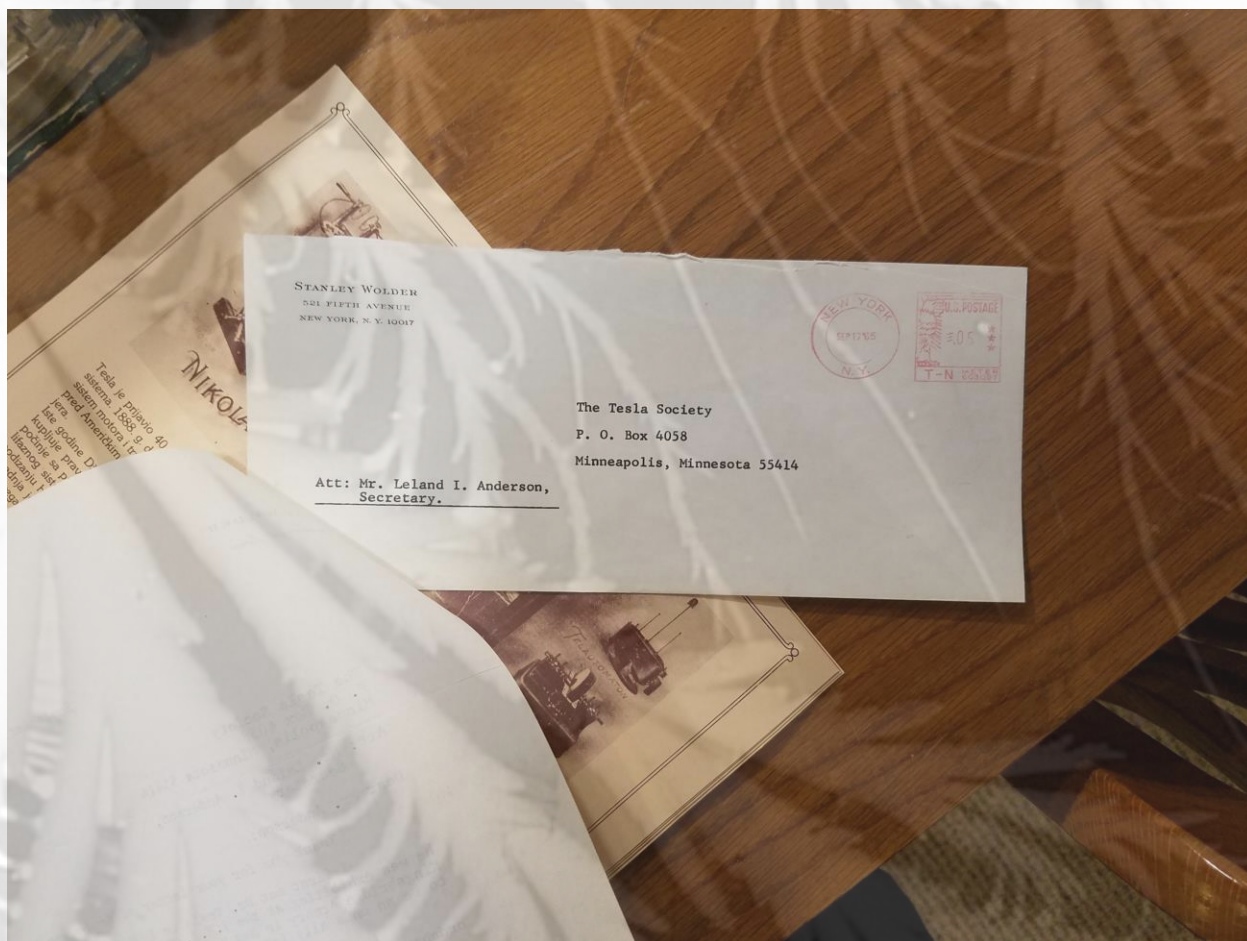
Thank you for your letter of September 7.

I first met Dr. Tesla in 1925 or 1926, when he was exhibiting at the I.R.E. Convention at the Kingsbridge Armory in New York City, and found him to be an unusually interesting individual.

I am enclosing your post card marked in accordance with your suggestion.

Sincerely yours,

SW:tnb  
Encl.



STANLEY WOLDER  
551 FIFTH AVENUE  
NEW YORK, N. Y. 10017

The Tesla Society  
P. O. Box 4058  
Minneapolis, Minnesota 55414

Att: Mr. Leland I. Anderson,  
Secretary.





*Tesla*

At the close of 1889, having worked one year in the shops of George Westinghouse, Pittsburgh, I experienced so great a longing for resuming my interrupted investigations that, notwithstanding a very tempting proposition by him, I left for New York to take up my laboratory work. But owing to pressing demands by several foreign scientific societies I made a trip to Europe where I lectured before the Institution of Electrical Engineers and Royal Institution in London and the Societe de Physique in Paris. After this and a brief visit to my home in Yugoslavia I returned to this country in 1892 eager to devote myself to the subject of predilection of my thoughts: the study of the universe.

During the succeeding two years of intense concentration I was fortunate enough to make two far-reaching discoveries. The first was a dynamic theory of gravity, which I have worked out in all details and hope to give to the world very soon. It explains the causes of this force and the motions of heavenly bodies under its influence so satisfactorily that it will put an end to idle speculations and false conceptions, as that of curved space. According to the relativists, space has a tendency to curvature owing to an inherent property or presence of celestial bodies. Granting a semblance of reality to this fantastic idea, it is still self-contradictory. Every action is accompanied by an equivalent reaction and the effects of the latter are directly opposite to those of the former.





- 2 -

Supposing that the bodies act upon the surrounding space causing curvatures of the same, it appears to my simple mind that the curved spaces must react on the bodies and, producing the opposite effects, straighten out the curves. Since action and reaction are coexistent, it follows that the supposed curvature of space is entirely impossible. But even if it existed it would not explain the motions of the bodies as observed. Only the existence of a field of force can account for them and its assumption dispenses with space curvature. All literature on this subject is futile and destined to oblivion. So are also all attempts to explain the workings of the universe without recognizing the existence of the ether and the indispensable function it plays in the phenomena.

My second discovery was a physical truth of the greatest importance. As I have searched the scientific records in more than a half dozen languages for a long time without finding the least anticipation, I consider myself the original discoverer of this truth, which can be expressed by the statement: There is no energy in matter other than that received from the environment. On my 79th birthday I made a brief reference to it, but its meaning and significance have become clearer to me since then. It applies rigorously to molecules and atoms as well as to the largest heavenly bodies, and to all matter in the universe in any phase of its existence from its very formation to its ultimate disintegration.





- 3 -

Being perfectly satisfied that all energy in matter is drawn from the environment, it was quite natural that when radioactivity was discovered in 1896 I immediately started a search for the external agent which caused it. The existence of radioactivity was positive proof of the existence of external rays. I had previously investigated various terrestrial disturbances affecting wireless circuits but none of them or any others emanating from the earth could produce a steady sustained action and I was driven to the conclusion that the activating rays were of cosmic origin. This fact I announced in my papers on Roentgen rays and Radiations contributed to the Electrical Review of New York, in 1897. However, as radioactivity was observed equally well in other widely separated parts of the world, it was obvious that the rays must be impinging on the earth from all directions. Now, of all bodies in the Cosmos, our sun was most likely to furnish a clue as to their origin and character. Before the electron theory was advanced, I had established that radioactive rays consisted of particles of primary matter not further decomposable, and the first question to answer was whether the sun is charged to a sufficiently high potential to project such particles and produce the effects noted. This called for a prolonged investigation which culminated in my finding that the sun's potential was 216 billions of volts and that all such large and hot heavenly bodies emit cosmic rays. Through





- 4 -

further solar research and observation of Novae this has been proved conclusively, and to deny it would be like denying the light and heat of the suns. Nevertheless, there are still some doubters who prefer to shroud the cosmic rays in deep mystery. One of them declared recently that they must come from very remote regions in which matter is converted into energy. I am sure that this is not true for there is no place where such a process occurs in this or any other universe beyond our ken.

A few words will be sufficient in support of this contention. The kinetic and potential energy of a body is the result of motion and determined by the product of its mass and the square of velocity. Let the mass be reduced, the energy is diminished in the same proportion. If it be reduced to zero the energy is likewise zero for any finite velocity. In other words, it is absolutely impossible to convert mass into energy. It would be different if there were forces in nature capable of imparting to a mass infinite velocity. Then the product of zero mass with the square of infinite velocity would represent infinite energy. But we know that there are no such forces and the idea that mass is convertible into energy is rank nonsense.

While the origin and character of the rays observed near the earth's surface are sufficiently well ascertained, the so-called cosmic rays observed at great altitudes presented





- 5 -

a riddle for more than 26 years, chiefly because it was found that they increased with altitude at a rapid rate. My investigations have brought out the astonishing fact that the effects at high altitudes are of an entirely different nature, having no relation whatever to cosmic rays. These are particles of matter projected from celestial bodies at very high temperature and charged to enormous electric potentials. The effects at great elevations, on the other hand, are due to waves of extremely small lengths produced by the sun in a certain region of the atmosphere. This is the discovery which I wish to make known. The process involved in the generation of the waves is the following: The sun projects charged particles constituting an electric current which passes through a conducting stratum of the atmosphere approximately 10 kilometers thick enveloping the earth. That is a transmission of energy exactly as I illustrated in my experimental lectures in which one end of a wire is connected to an electric generator of high potential, its other end being free. In this case the generator is represented by the sun and the wire by the conducting air. The passage of the solar current involves the transference of electric charges from particle to particle with the speed of light, this resulting in the production of extremely short and





- 6 -

penetrating waves. As the air stratum mentioned is the source of the waves it follows that the so-called cosmic rays observed at great altitudes must increase as this stratum is approached. My researches and calculations have brought to light the following facts in this connection: (1) the intensity of the so-called cosmic rays must be greatest in the zenithal portion of the atmosphere; (2) the intensity should increase more and more rapidly up to an elevation of about 20 kilometers where the conducting air stratum begins; (3) from there on the intensity should fall, first slowly and then more rapidly, to an insignificant value at an altitude of about 30 kilometers; (4) the display of high potential must occur on the free end of the terrestrial wire, that is to say, on the side turned away from the sun. The current from the latter is supplied at a pressure of about 216 billion volts and there is a difference of 2 billion volts between the illuminated and the dark side of the globe. The energy of this current is so great that it readily accounts for the aurora and other phenomena observed in the atmosphere and at the earth's surface.

For the time being I must content myself with the announcement of the salient facts, but in due course I expect to be able to give more or less accurate technical





- 7 -

data relating to all particulars of this discovery.

5/ To go to another subject, I have devoted much of my time during the year past to the perfecting of a new small and compact apparatus by which energy in considerable amounts can now be flashed through interstellar space to any distance without the slightest dispersion. I had in mind to confer with my friend George E. Hale, the great astronomer and solar expert, regarding the possible use of this invention in connection with his own researches. In the meantime, however, I am expecting to put before the Institute of France an accurate description of the devices with data and calculations and claim the Pierre Guzman Prize of 100,000 francs for means of communication with other worlds, feeling perfectly sure that it will be awarded to me. The money, of course, is a trifling consideration, but for the great historical honor of being the first to achieve this miracle I would be almost willing to give my life.

6/ My most important invention from a practical point of view is a new form of tube with apparatus for its operation. In 1896 I brought out a high potential targetless tube which I operated successfully with potentials up to 4 million volts from '96 to '98. This device was adopted by many imitators





- 8 -

and with slight modifications it is employed even now in all research laboratories and scientific institutions here and in other countries, and virtually all atomic investigations are carried on with it. At a later period I managed to produce very much higher potentials up to 18 million volts, and then I encountered unsurmountable difficulties which convinced me that it was necessary to invent an entirely different form of tube in order to carry out successfully certain ideas I had conceived. This task I found far more difficult than I had expected, not so much in the construction as in the operation of the tube. For many years I was baffled in my efforts, although I made a steady slow progress. Finally though, I was rewarded with complete success and I produced a tube which it will be hard to improve further. It is of ideal simplicity, not subject to wear and can be operated at any potential, however high, that can be produced. It will carry heavy currents, transform any amount of energy within practical limits, and it permits easy control and regulation of the same. I expect that this invention, when it becomes known, will be universally adopted in preference to other forms of tubes, and that it will be the means of obtaining results undreamed of before. Among others, it will enable the production of cheap radium substitutes in any desired quantity and will be, in general, immensely more effective in the smashing of





- 9 -

atoms and the transmutation of matter. I am hopeful that it will be possible by its use to carry out a process in which there should be no misses whatever, but only hits. However, this tube will not open up a way to utilize atomic or sub-atomic energy for power purposes. According to the physical truth I have discovered there is no available energy in atomic structures, and even if there were any, the input will always greatly exceed the output, precluding profitable, practical use of the liberated energy.

Some papers have reported that I had promised to give a full description of my tube and its accessories on the present occasion. This has caused me considerable annoyance as, owing to some obligations I have undertaken regarding the application of the tube for important purposes, I am unable to make a complete disclosure now. But as soon as I am relieved of these obligations a technical description of the device and of all the apparatus will be given to scientific institutions.

There is one more discovery which I want to announce at this time, consisting of a new method and apparatus for the obtainment of vacua exceeding many times the highest heretofore realized. I think that as much as one-billionth of a micron can be attained. What may be accomplished by means of such vacua is a matter of conjecture, but it is obvious that they will make possible the production of much more intense





- 10 -

effects in electron tubes. My ideas regarding the electron are at variance with those generally entertained. I hold that it is a relatively large body carrying a surface charge and not an elementary unit. When such an electron leaves an electrode of extremely high potential and in very high vacuum, it carries an electrostatic charge many times greater than the normal. This may astonish some of those who think that the particle has the same charge in the tube and outside of it in the air. A beautiful and instructive experiment has been contrived by me showing that such is not the case, for as soon as the particle gets out into the atmosphere it becomes a blazing star owing to the escape of the excess charge. The great quantity of electricity stored on the particle is responsible for the difficulties encountered in the operation of certain tubes and the rapid deterioration of the same.



*Nikola Tesla*

AUTOGRAPH MANUSCRIPTS  
of  
Nikola Tesla

Vol. II



THE GEORGE ELLERY HALE PAPERS - ROLL 34  
June 4, 1908

Dr. George Ellery Hale  
Director of the Solar Observatory  
of the Carnegie Institution,  
Mount Wilson, California

Dear Mr. Hale:

I learned with pleasure of your forthcoming book, The Study of Stellar Evolution, from which I expect to derive much needed information. I have greatly regretted that since our meeting at Chicago years ago, we have never been able to get again together. Your work interests me very much, and I am heartily in sympathy with you. Please do not fail, the next time you come to New York, to call on me and give me an opportunity to exchange a few ideas with you.

Sincerely yours,

N. Tesla

June 15, 1908

Mr. Nikola Tesla  
Long Island, New York

Dear Dr. Tesla:

Thank you very much for your letter of June 4th. I have often remembered with pleasure our discussions in New York, and hope to see you again in the near future. If you ever have time to come to California, be sure to pay us a visit here. Believe me, with sincere regards,

Yours very sincerely,

George Ellery Hale



(COPY)

Attachment E. W. Rice  
to Thomson + C.P.S.  
173

TESLA LABORATORY.

Long Island, N. Y., June 3, 1908.

E. W. Rice, Esq.,  
General Electric Company,  
Lynn, Mass.

My dear Mr. Rice:-

I am introducing a new invention of mine, and require in this connection direct current generators and motors as light as possible. Having had the opportunity of seeing some of your light weight machines at the New York Transportation Company, I have been struck with improvements you have made and recognize that it will be difficult to do better.

My invention has been tested dynometrically by myself and other engineers, but in the use I now contemplate, electric transmission and reading would be most suitable for my purpose. What I am most anxious about is to obtain a set of tabulated data in this matter, and it would further my purposes very much if I could obtain from you a generator capable of developing, say 80 HP. at speeds of from 800 to 1200 revolutions per minute, and two motors to run, preferably, from 1800 to 2000 revolutions per minute, which would be driven from the generator.

If the machines you have developed are on the market, we would buy them. If not, perhaps I might, through the influence of my technical friends and fellow-engineers on your staff, get this machinery for a certain term, to complete my tests, on any conditions that it would please your company to make. I shall frankly acknowledge your help in my presentation of the work to some Engineering Society, and can state with conviction that what I am doing cannot be but of interest to your Company.

I am writing a formal letter to the General Electric Company in this city, referring them to you, and would be obliged to you if you will do yourself what you can, and also refer this matter to Prof. Elihu Thomson and Dr. Steinmetz, for whose assistance I shall be much obliged. Anticipating the favor of an early reply, I remain

Sincerely yours,

(Signed) N. Tesla



(COPY)

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143

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Sincerely yours,

(Signed) N. Tesla



103  
June 10th, 1908.

Prof. Elihu Thomson,  
Dr. C. P. Steinmetz.

I enclose herewith copy of letter received from Nikola Tesla. I do not know any more than is stated in his letter. I would be glad to have your views.

E. W. Rice, Jr.



200

Schenectady, N. Y., June 15th, 1908.

Dr. E. W. Rice, Jr.,

Building.

Dear Sir:-

Received your note of June 10th, enclosing copy of letter of Mr. Nikola Tesla. The letter appears to me characteristic of Tesla, that is, unintelligible. All I can make out is, that he wants some light generators and motors, but how light, and for what purpose, is not stated. As a formal letter has been addressed to the New York Office by Tesla, it might be best to have somebody of the New York Office see him and get more particulars, and then inform us. The only guess I can make is that Tesla is experimenting with aerial navigation.

I doubt however, whether it would be advisable for the General Electric Company to enter into any relation with Tesla: his actions and utterances for some years have been such, that I believe he has become seriously unbalanced mentally, and when loaning him apparatus or in any other way approaching the project, the liability exists, that in some of his irresponsible newspaper articles, Tesla may claim that the General Electric Company is backing his work, and this would hardly increase the Company's engineering standing.

Yours truly,

CPS-JLM-SW



C O P Y.

Tesla Laboratory.  
Long Island, N. Y.

New York, June 24, 1902.

Edward W. Whitaker, Esq.,  
Patent Attorney,  
Washington, D. C.

My dear Sir:--

I regret very much that your communication containing the enclosed clippings has been overlooked. Permit me, at this late date, to thank you for the expression of your appreciation.

The efforts of Loomis in wireless telegraphy may have been the first in this country, but not abroad. The records show many anticipations in France and England.

The devices used until quite recently were, however, for all practical purposes, worthless. Neither Marconi or anybody else has succeeded in transmitting a message to any appreciable distance without the use of my apparatus. Last October the Hertzian appliances were abandoned and my apparatus substituted and the messages were, of course, easily transmitted. There is nothing particularly meritorious in the attempt, however, for I have already in 1899, as you may see from my patent of April 18, 1905, passed a heavy current around the earth (over 100 amperes) and excited the planet resonantly.

As a matter of fact, to transmit wireless messages, telegraphic or telephonic, under practical conditions and to appreciable distances, five of my discoveries are necessary:

First, my method of oscillatory conversion by means of condensers; second, the so-called "Tesla transformer"; third, my apparatus for the transmission of energy without wire, comprising grounded, resonant circuits; fourth, my methods and apparatus for individualizing signals, and, fifth, my discovery of the stationary waves.

Believe me,

Very truly yours,

N. Tesla.

See also Tesla's reference to article  
in the Electrician (London), Feb. 27, 1903,  
in the Electrical World article for Jan. 7, 1905,  
page 22.



C O P Y.

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N. Tesla.



SMITHSONIAN INSTITUTION  
UNITED STATES NATIONAL MUSEUM  
WASHINGTON 25, D. C.

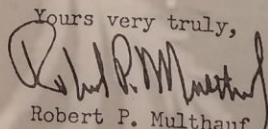
July 14, 1958

Mr. Leland I. Anderson  
1615 East River Terrace  
Minneapolis 14, Minnesota

Dear Mr. Anderson:

Mr. King found this letter in our files on Tesla and thought you might be interested in adding it to your records, if you do not already have it.

Yours very truly,

  
Robert P. Multhauf  
Head Curator  
Department of  
Science and Technology

Enclosure

Tesla Letter dated June 24, 1908



JOHN ESCH, 715 E. CIMARRON.

H. VINING, 723 E. CIMARRON.

Colorado Springs, Colo., Sept 1 1897

Mr Nikola Tesla

TO ESCH & VINING, DR.

CONTRACTORS...

...and BUILDERS

The Duff Co	16 72
F. A. Sperry	3 90
D. W. Walsh 318 - 9000 2 1/2, 6 x 18 400 50 ft poplar 15	55
→ Mr. Duffau 5 weeks watching	90 00
B. Vining 28 1/2 days	99 75
R. Doyier 5 days 6 hrs	17 25
W. Esch 1 5	4 90
A. P. Blake hardware	
Brass screws 3" glue 70 1 gr screws 3 1/2 7 14 60	135
1 gr 1 1/2 10 35 screws 25 1 gr 3/4 7 25	65
2 gr 5/8 50 set eyes 10 4 pulleys 100 set eyes 10	170
set centers 25 bicycle rims 225 25 6 mil 125	425
Buds 10 set eyes 10 trace 20	45
	\$241 47

Recd payment in full  
9/16/99 Esch & Vining



E. C. WOODWARD,  
Assayer and Chemist.  
Telephone 315 26 E. Kiowa Street.

Colorado Springs, Colo., 10-12-1904

Dear Sister Lena.

Your last letter  
just re'ed & I can't help but think I  
must seem dead to you for not answering  
your last two letters. Really I have thought  
of writing to you for some time past --  
but since the mill has been closed I  
have tried to get something else to keep  
me busy but so far have found nothing  
except my efforts towards collecting what  
(Wesla)  
is due me from Mr. T. So far he has  
paid me enough to have a balance due  
me of \$828<sup>59</sup> & you certainly realize what that  
means to a man of my financial caliber.

I wish you would not speak of the  
good things you have to eat at home, for  
I have so wished I could come there this  
winter & share in the Celery Salad, roast  
goose, Sauer Kraut, & Sauce etc. that  
it made me almost famished when I read  
your letter in regard to these things.

The last letter I had from the Boys



2/

was to the effect that they had made  
a small shipment of ore but I do not  
know how much they realized on it. Otto told  
me he would write me what it gave.  
When the mill closed here I had 23 days  
sallary due me, & from latest reports I am  
apt to get that sometime within the next  
14 days. It's a fact that if I get what  
(TESLA)  
Mr. T. owes me I shall make a trip home  
& get fat, after that I believe I would  
venture to go to Ariz. & see the boys &  
thin. I don't know just what I would  
attempt. I met Mrs. Mitchell on the  
St. a few days ago & she spoke of you  
& wanted to know if I ever heard from  
(?)  
you. I see Mr. Zehrun quite often but  
have not met his wife. Since you left  
here. We are having delightful weather here  
at present & wish you could be here to  
go to MANITOU & other places of interest  
with me. while I am not working.

I have not written since



she was here. I certainly should have but it seems I'm not much of a letter writer after all. I went & registered the other day & if I vote it will be for the first time I have done so since I came to Colo. At to how I will vote is a question? One thing sure & that is I shall not place an X at the top of my ticket. The state issue is the most important in Colo. this year.

While I would like to see August get , I'm afraid he wont be able to carry enough Rep. votes. I see the Hon?? J. B. Howten (?) is on the ticket in place of Julius Barnett Driscoll (?). I would like to have a vote in -- W - on that account. I certainly would vote for him not (?), because he is so honest towards the person who has the most cash.

I am glad you enjoy the papers. I always aim to send all of them for the week, but sometimes some of them are



4/

lost at my boarding place. I am  
glad to hear that Gerty is feeling better  
& would love to drop in accidentally just  
to see how she would act. You may tell  
her for me that I will write her a  
letter in the near future.

I hope to be able to write you better news  
as to my working in the near future  
& in the meantime let me ~~hear~~ from you  
again. I enjoy your letters very much.  
With best wishes to all & love to you,  
Gerty & Mother. I am your Bro

Carl.

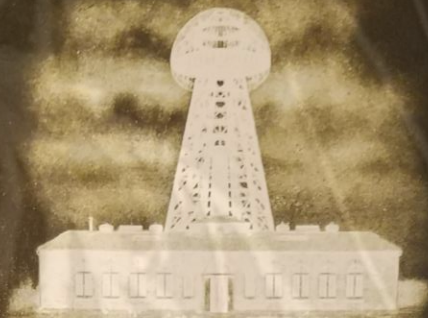
Goodby.











TESLA LABORATORY  
LONG ISLAND N.Y.

202 Metropolitan Tower,  
December 29th, 1910.

My Dear Mr. Duffner;

I was glad to receive your greetings of the Season which would seem to indicate that you are a good fellow after all, although you have given me considerable trouble. I should have expected a man of your intelligence to have understood the situation.

I remain,

Reciprocating in your good wishes,

Yours very truly,

*N. Tesla*

C. J. Duffner, Esq.,  
Watertown, So. Dak.



RALPH J. HAWKINS  
ATTORNEY AND COUNSELOR AT LAW  
SYNDICATE BUILDING  
PATCHOGUE, NEW YORK

June 18, 1907

Nikola Tesla, Esq.,  
The Waldorf Astoria, N. Y. C.

Dear Sir:-

On the 15th I received a letter from Mr. Schreff saying that you would resume the weekly payments on account of Eisemann.

If you wish to resume your weekly payments, I think you should pay at least ten dollars a week. Of course I do not know when you will stop paying, and I shall not consent to this unless you will pay ten dollars a week.

Yours very truly,

RJH/E

*Ralph J. Hawkins*  
at



## DUFFNER INSISTS THAT TESLA PAY HIS DEBTS

SUIT FOR \$899.22 WILL BE  
SETTLED THIS WEEK.

NOT LIKELY ELECTRICAL IN-  
STRUMENTS WILL BE SOLD.

This week will probably see "finis" written to the record of Nicola Tesla, electrician and inventor, so far as his relations with Colorado Springs are concerned.

Tesla erected an experimental station just east of the Deaf and Blind institute and promised the citizens of Colorado Springs wireless communication with Pike's Peak in a few days and wireless communication with Mars in a few months. This was several years ago. Neither promise was fulfilled and Tesla hied himself to other fields.

He left his station and a lot of valuable instruments here and placed C. J. Duffner in charge as custodian. Duffner kept guard over the instruments, etc., for month after month, living on the interest of Tesla's promises to pay. This interest gave out finally and Duffner got insistent. He packed all the stuff and stored it at the Wandell and Lowe storage house and then proceeded to sue out an attachment against the goods.

Duffner's claim, which is for \$899.22 and interest for six months, will be settled in the county court tomorrow. It is expected. It is understood he will get judgment by default and Tesla will have to hurry the cash to this city if he wants to save his valuable instruments, as Duffner is determined to have them sold to satisfy his judgment. The instruments are worth something like \$5,000. One transformer alone is worth \$1,000 and there is a pile of stuff suitable for any electrical supply house that is worth about \$3,000.

When Duffner's claim is settled, Tesla's bills in Colorado Springs will all be paid. His creditors have had a hard time getting their money. The city had to sue for water rent; an electric light bill had to be collected through the courts; one of the men who worked for him here collected a bill through the New York courts and finally Duffner is out to get his money.

as a Rule They Are I  
warded for Their

The inventor of fifty or  
was more often out at  
well paid. But George  
are for Gulton's Maw  
shot that modern invent  
profitable and that as a  
are now well rewarded.  
of the metal shoe-button  
a fortune, and the invent  
on shoe peg made half a  
The suspender-garter  
sold outright for \$50,000.  
lemon squeezer brought

The inventor of the h  
glove fastener has receiv  
nearly a million dollars. A  
of the double ball clasp f  
and bags about the same.  
tic inkstand has paid its  
000, and the automatic t  
has brought a fortune to  
The modern shipping tag,  
safety pin, the rubber penc  
and eye with a hump, the a  
and brake, the bicycle wh  
have all brought to their h  
dreds of thousands of dol

So much for the inve  
names are rarely heard am  
ands who use their invent  
great inventors of modern  
most of them become millio  
Howe, the inventor of the  
chine, realized \$2,000,000 fro  
Alexander Graham Bell r  
millions from his patents.  
Cormick, inventor of the  
chine, realized a net profit

George Henry Corliss am  
tune of \$5,000,000. Samuel C  
ver fame, and Hayward A.  
inventor of the Harveyized  
plate process, both were  
Mr. Edison counts his for  
millions. Elihu Thompson,  
of electric welding and b  
Westinghouse, inventor of th  
reaped immense fortunes  
patents, and Tesla, careless  
pecuniary rewards, is earnin  
of thousands of dollars eve

Mr. Walsh uses Edison. The  
Tesla to illustrate the type  
who earn both reputation a  
The names of such men ha  
household words all over th  
world. Independent of this c  
larger class in whose ranks  
dreds and thousands who mak  
able fortunes without enhan  
reputations because their inve  
come the property of and ar  
by manufacturers.

The conclusion is that in th  
discoverers or inventors go un  
and that the figure of the m  
ventor is less pathetic than th  
cause there is in his career so  
struggle, poverty and privat  
cago Inter Ocean.

Waiting for  
my reward  
name -



## INSISTS THAT A PAY HIS DEBTS

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York courts and finally Duffner is  
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## ENTORS AND THEIR DEE

as a Rule They Are Now Well Re-  
warded for Their Work

The inventor of fifty or sixty years ago  
was more often out at the elbows than  
well paid. But George E. Walsh gath-  
ers for Gunton's Magazine statistics to  
shof that modern inventing has become  
profitable and that as a rule inventors  
are now well rewarded. The inventor  
of the metal shoe-button fastener made  
a fortune, and the inventor of the wood-  
en shoe peg made half a million dollars.  
The suspender-garter invention was  
sold outright for \$50,000, and the glass  
lemon squeezer brought as much.

The inventor of the ball and socket  
glove fastener has received in royalties  
nearly a million dollars, and the inventor  
of the double ball clasp for pocketbooks  
and bags about the same. The automa-  
tic inkstand has paid its inventor \$200,-  
000, and the automatic tin-can opener  
has brought a fortune to the inventor.  
The modern shipping tag, the improved  
safety pin, the rubber pencil tip, the hook  
and eye with a hump, the automatic lock  
and brake, the bicycle whistle and bell  
have all brought to their inventors hun-  
dreds of thousands of dollars.

So much for the inventors whose  
names are rarely heard among the thou-  
ands who use their inventions. But the  
great inventors of modern times have  
most of them become millionaires. Elias  
Howe, the inventor of the sewing ma-  
chine, realized \$2,000,000 from his patent.  
Alexander Graham Bell made several  
millions from his patents. Cyrus H. Mc-  
Cormick, inventor of the reaping ma-  
chine, realized a net profit of \$10,000,000.

George Henry Corliss amassed a for-  
tune of \$5,000,000. Samuel Colt, of revol-  
ver fame, and Hayward A. Harvey, the  
inventor of the Harveyized steel armor-  
plate process, both were millionaires.  
Mr. Edison counts his fortune in the  
millions. Elihu Thompson, the inventor  
of electric welding and brazing, and  
Westinghouse, inventor of the air brake,  
reaped immense fortunes from their  
patents, and Tesla, careless as he is of  
pecuniary rewards, is earning hundreds  
of thousands of dollars every year.

Mr. Walsh uses Edison, Thompson and  
Tesla to illustrate the type of inventor  
who earns both reputation and wealth.  
The names of such men have become  
household words all over the civilized  
world. Independent of this class is the  
larger class in whose ranks are hun-  
dreds and thousands who make respect-  
able fortunes without enhancing their  
reputations because their inventions be-  
come the property of and are handled  
by manufacturers.

The conclusion is that in this day few  
discoverers or inventors go unrewarded  
and that the figure of the modern in-  
ventor is less pathetic than the old be-  
cause there is in his career so little of  
struggle, poverty and privation.—Chi-  
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I am  
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## TESLA'S WON ADVER

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Tesla, propounder of a t  
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Ca. MARCH 1902

CARL DUFFNER



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## TESLA'S WONDER TOWER HAS BEEN ADVERTISED FOR SALE BY SHERIFF

New York, June 13.—Because Nikola Tesla, propounder of a theory of communications with Mars has failed to satisfy a judgment of \$1,108.20, the mysterious tower at Wardenclyffe, L. I., has been advertised for sale by Sheriff Wells of Suffolk county. Mr. Tesla has expended a fortune upon his electrical experimental works in Wardenclyffe, whose purpose he has kept to himself. Only his closest friends were permitted to get within seeing distance of his "Wonder tower" as the huge structure of steel and cement was called and no one appears to know exactly what it was intended for. That it was to be used to demonstrate his theory of communicating with the Martians is popularly believed.

The judgment is held by Dr. James Warden. The security is the two hundred acres owned by Tesla upon which stands the tower which is sunk into the ground a distance of 150 feet and is 150 feet in height, according to Tesla's state-

ments to his friends. The tower has a great mushroom top from which there used to be blinding flashes of electricity at night some years ago. Mr. Tesla when seen at the Waldorf-Astoria last night, said the case was an old one, the judgment growing out of an option he had taken on the land. He said the matter would be settled.

Colorado Springs, Colo., June 13.—Nikola Tesla about ten years ago erected a laboratory and tower on Nob hill near this city for experiments in the transmission of power without wires. The plant was valued at \$30,000. Shortly after he left this city the caretaker of the plant, a man named Duffner, sued Tesla for about \$1,000 salary. Subsequently the assessor's office levied upon the property for taxes with the result that the building and machinery was sold under the judgment obtained by Duffner and the taxes were paid out of the proceeds of the sale.

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New York, March 8.—Nikola Tesla, inventor and pioneer in the radio field, broke his silence of years today and announced his perfection of a system of transmitting power without wires.

By this means, he said, it would be possible to transmit power for the operation of ships and aircraft, illumination and machinery to the greatest terrestrial distance with smaller losses than now obtain in relatively short metallic circuits. He is already preparing to erect such a power station.

Professor Tesla explained his system as comprising an electrical generator which delivers its energy into the earth, whence it can be unlocked, so to speak, by anyone having the proper electrical

Cal. MARCH 1902

CARL DUFFNER



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Professor Tesla explained his system as comprising an electrical generator which delivers its energy into the earth, whence it can be unlocked, so to speak, by anyone having the proper electrical key. Wireless transmission of energy has been the life aim of the inventor, an aim he now claims to have achieved at the age of 67.



# GUNTON'S MAGAZINE

GEORGE GUNTON, Editor

VOLUME XXII

JANUARY-JUNE

1902

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as individual bargains are concerned, but their effect upon the welfare of the nation will depend very largely upon how they affect the character of the domestic industries. Therein lies the philosophic importance of the protective as against the *laissez-faire* theory of public policy. It is not that protection turns trade away from one country toward another, but that by protecting domestic opportunities it creates new industries and new forces and practically new nations. Thus a net addition is made to the world's welfare through the development of industries and economic methods that could never have come into existence under the *laissez-faire* policy, which on the other hand would have stereotyped the primitive industries and type of social life.

## THE INVENTOR'S WORLD OF MARVELS

GEORGE ETHELBERT WALSH

When the complete history of invention has been written, it will inevitably prove a popular book because of the innumerable chapters of a romantic nature that must of necessity adorn its pages. The modern word invention comes from the Latin *invenire*, which literally translated means to come or stumble upon by chance, and the early application of it to denote the accidental discoveries of useful contrivances was peculiarly apropos.

Invention was not an art or science in the days of the early discoverers of laws and principles that have since revolutionized the material world, and the so-called inventions were all accidental or fortuitous in their origin. The professional inventor of to-day applies himself to the study of certain mechanical laws and necessities for the avowed purpose of discovering or inventing something new that will simplify old methods of labor and production, and the products of his inventive mind have less of the accidental about them than was formerly the case. Invention has to a certain extent become a legitimate profession, and it is a science or art that requires the cooperation of a mind peculiarly endowed with rare qualities and the accumulated wisdom of the ages.

There are purely fortuitous discoveries and inventions to-day, and some of them are of the greatest importance in the material world; but the great bulk of the inventions come from the laboratories and machine shops, where trained inventive minds daily apply themselves to the task before them. Intelligent experiments along certain lines are constantly being pursued



by the world's brightest minds, and the ends which they have in view are generally pretty clearly foreseen. Accidental discoveries will often be made while in pursuit of a particular idea or invention, and these may be set down as among the fortuitous inventions of the present age.

Prior to the present century of material progress and invention the great discoveries were nearly all the products of chance observation. The story of the boy watching the steam forcing up the lid of a cooking vessel, which suggested to him the power of steam, and the account of Newton establishing the existence of gravitation through the falling of an apple, are familiar popular illustrations of how the great discoveries of the past were made in an accidental manner. Faraday, the great scientist and inventor, himself confessed that the fortuitous discovery made by rubbing a piece of amber released "an invisible agent which has done for mankind far more wonderful things than the genie of Aladdin did or could have done for him." The discoverer of gunpowder was as much startled by what he had done as the world which soon heard of it. A child actually first discovered the magnifying power of two lenses placed at certain distances apart, and its father, being an optician, took the suggestion up and produced the first telescope out of a tube of pasteboard. The manufacture of leaden shot by dropping molten lead from a high altitude was discovered by chance, and Arkwright obtained his idea of spinning by rollers by chance observation.

The list of ancient discoveries and inventions produced fortuitously could be extended indefinitely, and even those of modern times produced accidentally would make a formidable list. But most of these latter were also directly attributable to the genius and hard work of the inventors. Thus Professor Roentgen would

never have discovered his marvelous X-rays had he not been experimenting in a dark room with a Crooke's vacuum tube. Neither would Edison have invented the phonograph had he not experimented over and over again with the telephone, which one day accidentally set him thinking when the vibration of his voice had sent the fine steel point of the mouthpiece into his finger.

The modern inventor and discoverer of new laws of the material and mechanical world is a man who pursues his profession with the same steadfast purpose that a physician or lawyer devotes to his calling. The day of the purely fortuitous invention has mostly passed. Even the inventor of the small things which amuse or supply a long-felt want is usually one who has devoted years to the study and experiment of certain lines of work. The inventor of the simple puzzle called "pigs in clover," which had a remarkable run and netted a small fortune to its discoverer, spent nearly a lifetime in making popular games and puzzles before he hit upon the thing that made his reputation. He was a genius in this particular line, and he applied himself assiduously to the invention of new games and toys. Sam Lloyd, according to his own account, studied mechanics in all its branches, and, while gifted with certain ingenuity which enabled him to see patentable ideas, he pursued his studies as steadily and persistently as if he were working out a mathematical demonstration.

Modern inventing has become a profitable and lucrative profession for those who have the inventive faculty and the willingness to pursue it as others do a business or practice. The world owes much to the inventors of the age, but if our life and method of living have been revolutionized and improved by their ideas their rewards have been ample. The successful owner of a popular patent receives remunerations that are



almost princely. Some of the ideas seem ludicrously out of all proportion to the money reward given, but there is usually a law of compensation in all things.

The inventors of important machinery and labor-saving devices that have been only poorly rewarded in money have died with a reputation that will forever cling about their names, while the discoverers of some of the little useful articles that have made hundreds of thousands of dollars for them are unknown to the mass of readers. The inventor of the metal shoe-button fastener, which does away with the old slow method of sewing the buttons on by hand, made an enormous fortune from his patent, and the inventor of the wooden shoe-peg made half a million dollars. The invention of the suspender garter was sold outright for \$50,000, and the discoverer of the glass lemon squeezer received about the same sum for his idea. The ball and socket glove fastener is often quoted to show the large fortunes that are sometimes found in small inventions. The inventor of this patent is said to have received in royalties nearly a million dollars, and the discoverer of the double ball clasp for pocket-books and bags has reaped nearly as large a fortune. The automatic inkstand has paid its inventor over \$200,000 in the short time since its introduction, and the invention of the modern automatic tin-can opener brought an independent fortune to its fortunate discoverer. The inventor of such a simple thing as the modern shipping tag, with its patent ring for preventing the string from tearing out, received hundreds of thousands of dollars. The little brass paper clip fastener, the improved safety pin, the rubber pencil tip, the hook and eye, with a hump to prevent slipping, the automatic lock and brake, the bicycle whistle and bell, and scores of other inventions of a similar nature, have rewarded their discoverers amply in the coin of the realm.

Although many of these apparently simple inventions were discovered by chance, most of the inventors were either long associated with the work in hand, or had come to realize the necessity of some such invention to save time and labor. Necessity is the mother of invention, to-day as always. The idea that fortuitous inventions have formed a prominent part in the world's industrial and material development has induced some to attempt the invention of useful articles without any previous experience or preparation. They have trusted to blind chance, and have failed. Accidental discoveries cannot be taken in the literal sense, for very few indeed have ever been the product of an untrained and unobserving mind. A mechanic who has spent half a lifetime in one department of human endeavor may see the great need of a simple invention to save time or labor in his work. Year by year his mind dwells at intervals upon the subject, and one day an idea flashes upon his mind or a simple accident suggests the way of inventing what is needed. Such an accidental invention is really the result of years of study and observation, and it is thus that many of the simple inventions have come into existence.

The great inventors of the world, who hold a foremost position in popular estimate because of the widespread effect of their patented ideas in revolutionizing industries and modern life, have not always been as freely and amply rewarded in money as their benefactions to the race justified. Many of the early ones died comparatively poor, and others spent the sums they received in royalties in making new experiments. The pecuniary rewards had little effect upon them, for they were laboring in a field of thought and discovery for the love of the work, and the money considerations were only the incidentals of their life. The improvement of the patent laws, both in this country and in



England, has made it possible for a great inventor to reap a fortune from his patents, while at the same time laboring in the interests of humanity. Consequently few, if any, of the modern inventors of note have failed to receive just returns for their discoveries. Had Morse, the inventor of the electric telegraph, been born a generation later, he would have made far more money from his great discovery. Honors simply poured upon him in time, but he never realized the independent fortunes from his inventions that subsequent laborers in his field did.

As instances of the pecuniary rewards bestowed upon great inventors in modern times mention should be made of Edison, Tesla, Bell, Thomson, McCormick, Corliss, Colt, Howe, and others. Elias Howe, the inventor of the sewing machine, which has lightened the burdens of the world more than can be expressed in figures, realized fully \$2,000,000 from his patent. But it was only after years of hard struggle to get his patent on the market, and then after a decade in fighting infringers in the courts, that he received the actual reward of his labors. Alexander Graham Bell, whose name is so closely associated with the Bell telephone and multiple telegraphy, made several millions from his numerous patents. Cyrus Hall McCormick, the inventor of the reaping machine, left an enormous estate at his death in 1884. It was estimated in 1859 that his invention saved the country at least \$55,000,000 per annum, and in view of this no one can begrudge him the ten odd millions of profits he made as the result of his reaper. George Henry Corliss, the inventor of the famous Corliss engine, which revolutionized the construction of the engine and saved enough fuel to more than double the capacity of any machine, amassed an immense fortune, variously estimated at \$5,000,000 to \$6,000,000. Samuel Colt, of the Colt revolver fame,

which it has been said paved the way for the easy conquest of Mexico by the American soldiers, realized an ample fortune from his invention, and died in 1862 a very rich man. Hayward A. Harvey, the inventor of the Harveyized steel armor plate process, brought fame and honor to his country by his invention, and even today the Harveyized steel armor plates stand without a peer. Mr. Harvey died in 1893, the possessor of a fortune that placed him in the millionaire class, and his patents are still accumulating money for his heirs.

There is a group of three living inventors to-day whose names are household words, and whose inventions are accumulating fortunes for them every year. Thomas Alva Edison is probably the best known, and there stands to his credit such important inventions as the phonograph, duplex and quadruplex telegraphy, the carbon transmitter telephone, the incandescent lamp, the electric railroad, the electrophone, the motograph, the megaphone, the phonoplex telegraph, the electric pen, the kinetograph, the magnetic ore separator, the fluoroscope, the new vacuum light, and numerous others. One does not wonder, with so many important discoveries to his credit, that Mr. Edison counts his fortune in the seven figures. He is probably the most important inventor of the century in the matter of revolutionizing industries by his inventions. A second member of this group, who is hardly less generally known, is the tall, thin Austrian, who has come to live in our midst to work out problems that scientists all over the world dared not touch. Nikola Tesla is not a past but a present and future star in the firmament of inventors, and from his laboratories come now and then the hint of wonders that his brain has conceived and his hand wrought out in material form. Tesla is a true inventor of the old school, laboring for the love of his work and careless of the pecuniary rewards, but these



latter are flowing in upon him at a rate that must be extremely gratifying. It is said that if he would devote his inventive genius to the discovery and manufacturing of articles of general industrial use he could amass several millions in a few years, but he prefers to labor in his own way, working out intricate problems of electricity that may never return him much pecuniary reward.

Elihu Thomson, the third member of this group of modern living inventors, was associated with Professor Edwin J. Houston for many years, and their combined inventions of electric dynamos were put into practical working use under the company's name of Thomson-Houston electric works. He was the inventor of electric welding and brazing, and his experiments with alternate current induction, and his application of the air blast to switches and commutators for blowing away and a great fortune. Westinghouse the inventor of the air-brake which bears his name, should be included in the list of latter-day inventors who reaped immense fortunes from the direct application of their genius.

### IS CUBA "STARVING"?

Is Cuba "starving"? Is the island on the ragged edge of bankruptcy, ready to topple into ruin and starvation if the United States government does not at once grant liberal tariff gratuities, regardless of domestic interests? This is what a suddenly-recruited army of political philanthropists, in an equally sudden spasm of tender sympathy, are asking us to believe, but the concealed purpose grows plainer the longer the sugar trust and free trade experts figure.

The first and most vociferous cry has been that we are under everlasting obligations to help Cuba. To this end our own commercial policies must be ignored. Now we are being exhorted to give Cuba free trade for an additional reason, to keep her from spending her money in the European markets. To bolster up this position more figures are exhibited. We are told that last year Cuba's exports amounted in value to \$75,000,000, that she purchased foreign goods valued at \$66,000,000, and that only \$28,000,000 worth of these goods came from the United States. Further figuring may let in a little more light on the subject. According to the figures given, Cuba sold \$9,000,000 more goods last year than she bought. In other words, in spite of her calamitous condition, the balance of trade was in her favor. A situation like that is not usually considered a foretaste of bankruptcy.

Still more evidence along this line comes to light in the report of the hearings before the ways and means committee for January 15 and 16, 1902. Mr. Edwin F. Atkins is a genuine Bostonian, but he is also a sugar planter in Cuba to the extent of owning about 14,000 acres, and is a partner of Mr. Havemeyer. Mr. Atkins told the committee (page 21 of the report) that: "The





THE WALDORF

THE WALDORF-ASTORIA, NEW YORK  
HOTEL BELLEVUE, PHILADELPHIA  
THE STRATFORD, PHILADELPHIA  
BULLITT BUILDING RESTAURANT, PHILADELPHIA  
GEO. C. BOLDT, PROP.

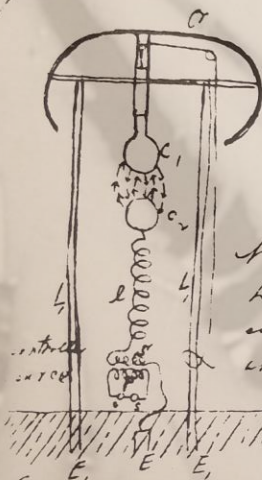
NEW YORK CABLE ADDRESS: BOLDT, NEW YORK  
PHILADELPHIA CABLE ADDRESS: BOLDT, PHILADELPHIA

# The Waldorf-Astoria, Fifth Avenue, 330 and 34th Streets and Astor Court,



THE ASTORIA

from old note



New York May 29 1911

I annex sketch a terminal  $C$  in form of a roof is supported on conducting supports  $L, L$ . Terminal  $C$  is adjustable and in contact with structure of roof or terminal  $C$ . A resonating system  $C, L, E$  discharges into  $C$  and produces oscillations in system  $C, L, E, E$ . This arrangement obviously necessary to support roof or terminal  $C$  on insulating supports.

Now in sketch a scheme the difficulty will be probably

to get the oscillations of the free system  $C, L, E, E$  strong enough to be very effective in transmission through earth as in my system. The length of conductors in the free system

should be  $\frac{\lambda}{4}$ , and the length of the discharging element should be  $\frac{3}{4}\lambda$  or  $\frac{7}{4}\lambda$  or any odd number.

Suppose to get an idea we take  $C = 10000 \text{ cm}$ . This is reasonable. Then we have  $\frac{2\pi}{100} \sqrt{L \times \frac{10000}{9 \times 10^9}}$  the period of system. We should have vibration and made greater than 100000 and to satisfy this  $L$  would have to be  $\frac{9 \times 10^9}{100000} = \frac{9 \times 10^4}{100} = 900$

calculated it would appear that the supports  $L$  would have to be about 600 feet. The arrangement would be ok with good insulation.

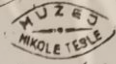
The self-induction of a straight conductor is  $L = 2 \times 10^{-7} \ln \frac{2L}{r}$ . Now, take  $L = 300 \text{ feet} = 900 \text{ cm}$ . If we use  $L$  as, 100000 per 2' diam.  $r = 1 \text{ cm}$ . Then

$\frac{2L}{r} = 3600$  and from this I find  $L = 134000 \text{ cm}$ . Again taking the length 600 feet we would get inductance probably 200000 cm.

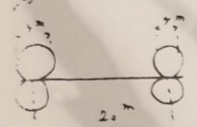
To get lower frequencies, evidently in above scheme self-induction must be increased. In the charging and discharging circuit may use two different periods and both vibrations will be quite reasonable.



Sept 18, 1946



following results may be confidently expected.  
 1. Smaller lower 200 feet and terminal roof  
 of cheap construction as best designed. The  
 roof will comprise a single platform with spher-  
 ical bodies of large curvature on top. The con-  
 struction of latter will be given a detailed  
 on platform 20 miles diameter, 15 rows surfaces on  
 top and 15 on bottom as shown in sketch below



It is difficult to estimate to advance the  
 capacity of the structure with precision  
 but an approximate idea may be obtained. The spherical  
 bodies will be each of a capacity of 200 C.H. The side  
 area  $30 \times 200 = 6000$  C.H. without taking account in  
 consideration. This may be approximately capacity will be  
 much smaller. Estimates place the maximum volume as  
 1000 C.H. (capacity not constant). The diam-  
 eter of each spherical body only  $\frac{1}{6}$  of surface is  
 fully utilized. The surface of one spherical body will  
 be  $\pi \times 400^2$ . Calling  $\frac{1}{6}$  density we have area on  $\frac{1}{6}$  of  
 surface  $\frac{\pi \times 400^2}{6 \times 3 \times 10^8}$  and of electricity we can safely assume

$\frac{1}{10} = 10$  minimum This would give on the whole  
 structure  $\frac{\pi \times 400^2 \times 10 \times 30}{6 \times 3 \times 10^8} = 10$  roughly at least  $\frac{1}{103}$  Coulombs

Now if we put capacity as 1000 C.H. we would have  
 $\frac{1}{103} = \frac{1000}{9 \times 10^{11}}$  V and  $V = \frac{9 \times 8 \times 10^{11}}{103} = 7200000$  volts

This estimate is surely small and we may take safely 10000000 volts  
 as 1000 C.H. capacity.

Considering simply facts as above and leaving out short range we  
 have since  $C \cdot P = C_p$   $V = 10^7$  volts  $C = 1000$  C.H.  $C_p = 10000000$   
 $\frac{1000}{9 \times 10^{11}} P = \frac{636 \times 9 \times 10^5}{9 \times 10^{11}} P$   $P = 7200000$  bolts. This means variation  $C_p = 3200000$   
all over place

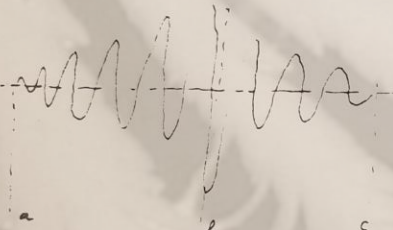


Oct. 15, 1901



Considerations relative to rate of energy delivery is any point of globe with long distance apparatus

Assume that a grounded secondary is employed excited by a primary through which condenser discharges and let both the circuits be in perfect tune so that the secondary system vibrates the same rate whether the primary be closed or open. The form of wave is then as illustrated in diagram. At a primary begins to



excite, at b somewhere in the middle of wave train primary is opened and at c vibrations in secondary cease. In this form of electrical movement the current and e.m.f. are in phase.

hence the power is always given by the product of these given lines during each half wave, but it must be remembered that the energy is passing from static to kinetic form and consequently the actual power is only that supplied by primary. The secondary circuit increases the amplitude only. This is many cases that is desired in wireless telegraphy where a device like a spark gap is employed in connection with a tuning circuit. Let us then see what can be expected as maximum rate during one swing.

In previous examples  $E_{max} = \frac{9}{5} \times 10^6$  Volt Current 2000 Amp.  $\therefore a = 45 \times 10^5 \times 2000$   
 Rate for largest swing rate of power will be  $E \times I_{max} = \frac{9}{5} \times 10^6 \times \frac{\pi}{2} \times 2000 = \underline{5.7 \times 10^9 \text{ Watts}}$

For a spherical shell we shall have:

Circumference of shell about  $4 \times 10^8$  cm. Suppose a strip of ground 1000 ft wide  $\frac{1}{2} = \frac{9.2}{200}$  inch is withdrawn the current through strip will be  $\frac{1000}{4 \times 10^8} \times \frac{\pi}{2} \times 2000$   
 $I = \frac{\pi}{4 \times 10^5}$  Energy in strip assuming superficial propagation will be  $a \times m \times l$   
 $\frac{E}{200} = \frac{1000}{4 \times 10^5} \times 30 \times 10^8 = 7.5 \text{ Watts}$   $\frac{E_{max}}{200} = \frac{4.7 \times 10^9 \times 10^3}{\pi} = \underline{1.5 \times 10^9 \text{ Volt}}$

Assuming magnifying factor is 100,000, current 2100 we may get  $a \times m \times l$   
 total current  $I = 1.1 \times 10^7$  Volt  $\frac{E}{2} = \frac{\pi}{40}$  amp and  $W_p = \frac{1.1 \times 10^7 \times 10^3}{40} = \underline{2.75 \times 10^9 \text{ Watts}}$

perfectly wonderful!

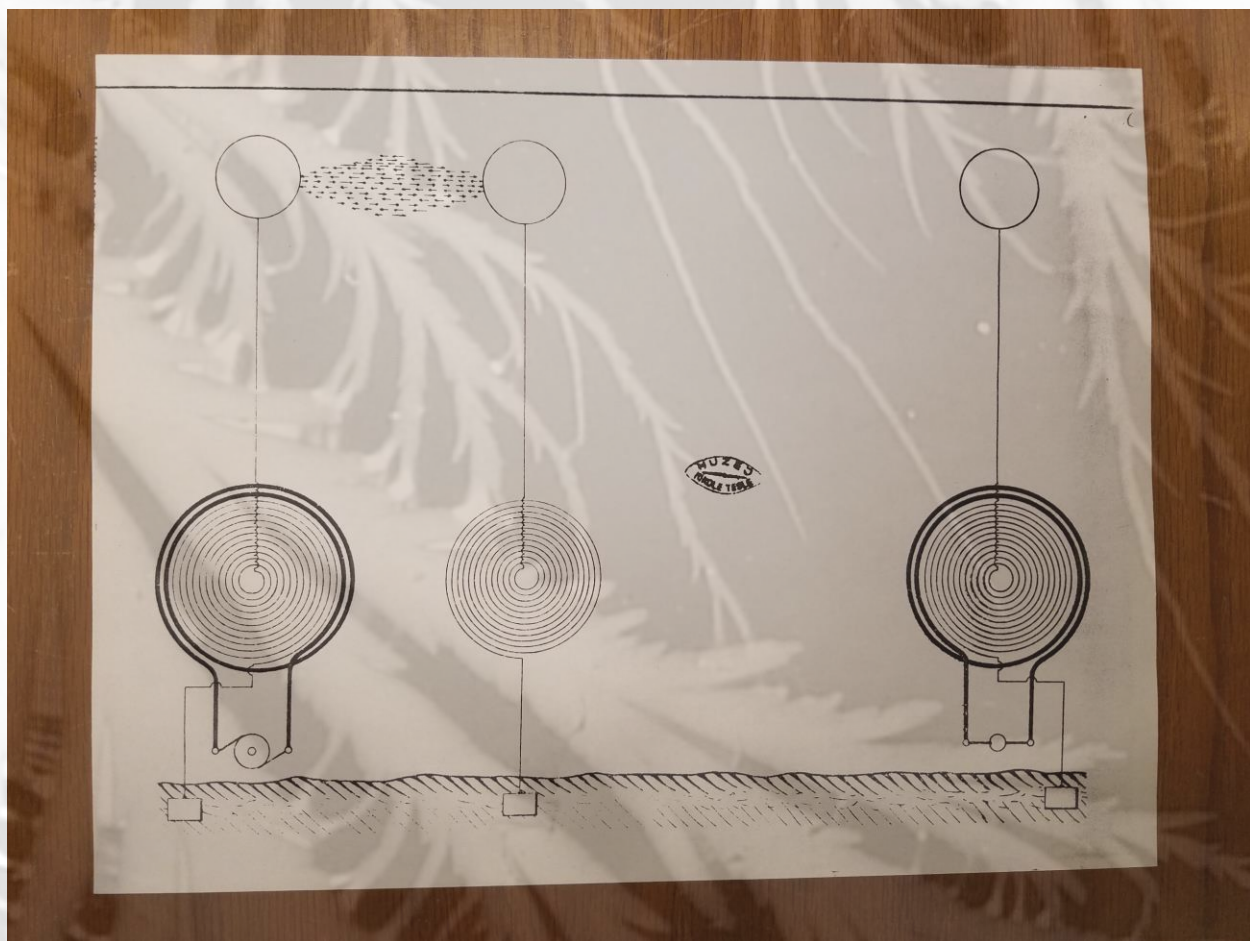


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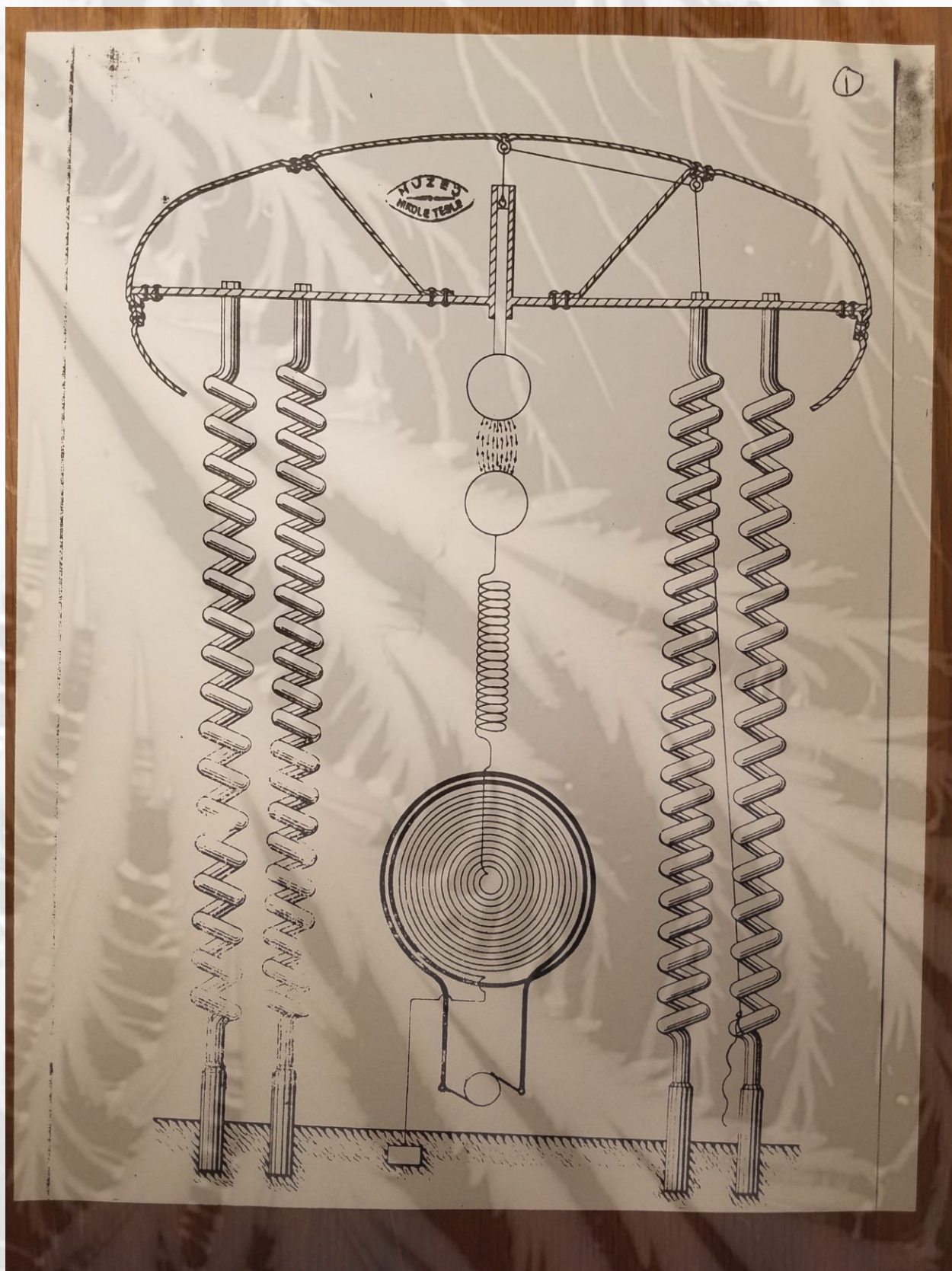
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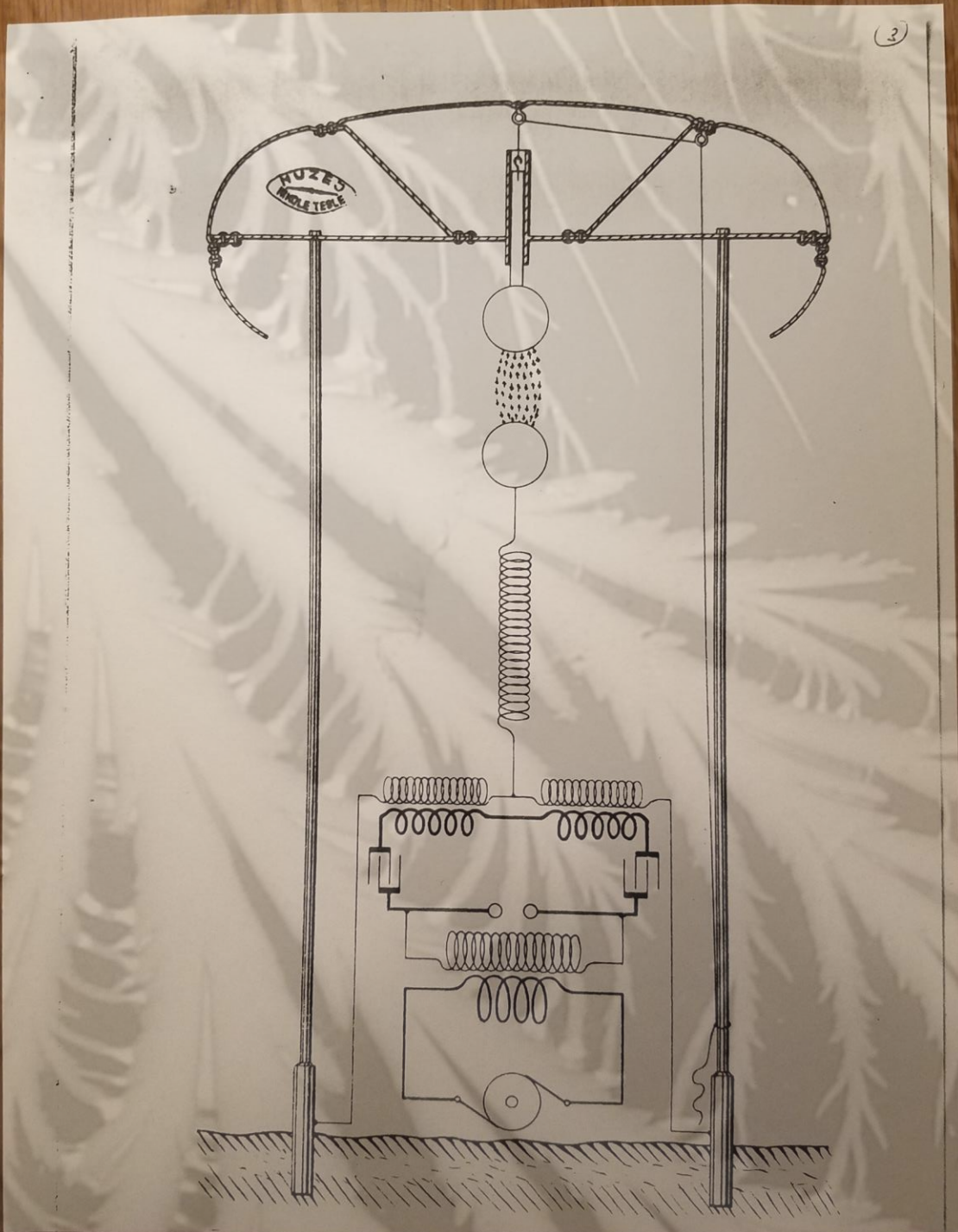
















LEAH LABORATORY  
LONG ISLAND N.Y.

165 Broadway, New York,  
July 1st, 1909.

My Dear Johnson:

Replying to your inquiry, I cannot recall that I have ever run across such a term as the "multiple item", which probably should read "multiple time". Both phrases are equally absurd, but it is possible that in Fulton's time, when scientific terms were rather vague, on account of lack of precision of knowledge, the latter expression might have been used to designate what is now known as the "ratio of transmission". You understand that a chain runs over two toothed wheels, one, usually the smaller, the driving wheel and the other the driven one. Obviously, the rims of both wheels move with the same speed as the chain but the number of revolutions which each of them performs in unit time is inversely as the diameter. If the chain runs 36 feet a second, while the engine makes three turns, it means that the driving wheel on the engine has a circumference of 12 feet or a diameter of about four feet. It seems therefore that in this particular instance, the chain was running over a smaller wheel, the circumference of which was one foot (diameter  $\frac{1}{3}$  of a foot). This would make the small wheel revolve 12 times while the wheel on the engine makes one revolution. In other words, the small wheel rotated 36 times a second. We have now chains which run much faster, but this would be decidedly too high speed for a chain of that time. As there are numerous arrangements possible, I could not form an opinion, unless I saw some diagram or per-





TESLA LABORATORY  
LONG ISLAND N.Y.

#2

used carefully. the article which no doubt contains sufficient indication to lead to a correct conclusion.

I was sorry that I was unable to come the day before yesterday, as I would have desired.

Hoping that you will enjoy your summer vacation, I remain,

Yours very ~~truly~~ sincerely

*Nikola*

R. U. Johnson, Esq., Editor,  
Century Magazine,  
33 Union Square, New York.

P. S.

*I find that this was not mailed and  
send it by messenger. If you will  
let me have the article I say  
be able to get it the first.*





165 Broadway, New York,

July 6th, 1909.

My Dear Johnson: -

After carefully perusing the passage, I have come to the conclusion that Fulton cannot have meant anything else except that the engine makes three feet per second and that of necessity implies that this is the speed of the piston. The number of revolutions is immaterial. It may have been thirty or sixty a minute.

The statement, as made, is not explicit to us, but may have been quite explicit to engineers of that time. It should have been written as follows: -

"To go 16 miles, the chain must be run 24 miles, or 36 feet a second. The (piston of the) engine makes three (feet per second) - the multiple time is 12 to one".

In the above, I assume that the expression "multiple time" was customary to designate the ratio of transmission.

Yours sincerely,

*N. Tesla*

R. U. Johnson, Esq.,  
Editor of the Century Magazine,  
33 Union Square, New York.





165 Broadway, New York,  
June 16th, 1910.

My Dear Luka; -

I am sure that my friend Kohlisaat will be glad to respond to your request. You know, of course, that he is now the proprietor of the paper as well as its Editor.

I shall certainly be delighted to see R.U.J. the second, and hope that besides the qualities you name, he has also inherited some of those of his grandfather.

Sincerely yours,

*N. Tesla*

R. U. Johnson, Esq., Editor,  
Century Magazine,  
Union Square, New York.



Notes given to G H Clark by E G Gage  
December 1, 1942

RE TESLA

The first time that Tesla saw a radio station--the interior, that is--was in 1910, when E. G. Gage took him on a tour through the wireless station of the Radio Tel. and Tel. Co., "MR", in the Metropolitan building, New York City.

Gage was an operator for the Radio Co. at the time, and had met Tesla several times previously, at the factory of Fritz Lowenstein, who was a close friend of Gage's. Lowenstein had worked several years for Tesla, notably during the latter's experiments at Pike's Peak.

Tesla's office was in the Metropolitan Tower, on the 24th. floor, while the Radio Tel. and Tel. Co.'s. office was just above, on the 25th. Nevertheless, Tesla had never seen the station ( which was in the main building, not in the tower) until the date given above.

Gage, who was by no means immune against the ladies, had been in Tesla's offices after the meeting at Lowenstein's, and at one of these times he asked Tesla's stenographer ( who was far from being bad-looking) to visit the station. Tesla overheard the invitation, and at once "invited himself in". Several weeks later, the visit took place.

Tesla paid no particular attention to anything except the coupling coils. "There are my coils", he said. Further, pointing to the condensers, spark gap, etc., he said " These do not interest me; they are not mine; but those coils were my idea and they interest me greatly".

When the Radio T. and T. Co. broke up, Tesla sent for Gage, and would have given him a job, but Gage told him that a job had already been found, with the Marconi Co. Mr. Sammis of that company was going to send him as operator to the new station in the Metropolitan Tower. Gage took that job, but today his main regret is that he did not accept Tesla's offer.

Incidentally, as a sort of poor taper-off, this same year--1910--- marks the date when Gage first made my acquaintance. I went to MR to measure the antenna constants for the Navy ( see rough log, 1910) and met Gage there. I am glad to say that our friendship has continued unbroken down the intervening thirty two years.

G.H.Clark

Ex E G Gage



202 Metropolitan Tower,  
October 13th, 1910.

My Dear Mr. Hammond;

You have probably forgotten that article I have promised and will be surprised, therefore, when I tell you that I have not abandoned it and expect to furnish it soon, if you think that it will be of any use. Will you please let me know what you think of the matter at present?

Regretting that it has been impossible for me to comply with your request at that time, I remain, with kind regards,

Yours sincerely,

*M. Tuxle*

John Hays Hammond, Jr., Esq.,  
131 Grove St.,  
New Haven, Ct.

*Metropolitan Tower was at 1 Madison Avenue.*





202 Metropolitan Tower,  
October 24th, 1910.

My Dear Luka;

I was glad to note from the enclosed  
that people are beginning to find out about you  
things which I knew long before. A volume of your  
immortal poems is always before me on my desk.

I remain,

Hoping that you are all in good health,


Yours very sincerely,

*W. Teale*

R. U. Johnson, Esq., Editor,  
Century Magazine,  
New York, N.Y.

Enclosure.





202 Metropolitan Tower,  
November 8th, 1910.

My Dear Mr. Hammond;

I was glad to read the enclosed newspaper reports. This is water on my mill. Just go ahead and make a lot of money, then I will sue for infringement and we will divide.

Yours sincerely,

*W. F. Peck*

John Hays Hammond, Jr., Esq.,  
Lockout Hill,  
Gloucester, Mass.

Enclosure.



Gloucester, Mass., November 10th, 1910.

Nikola Tesla, Esq.,  
202 Metropolitan Tower,  
New York.

My dear Mr. Tesla:

It will be very agreeable for me to share profits with you, but I shall only do so on the condition that you share our liabilities also.

After investigating this matter I am sure that you will take little interest in it.

I expect to be in New York in a few days and hope to have the pleasure of seeing you personally with regard to the article which you have so kindly prepared for me.

The Yale faculty and undergraduates are endeavoring to get me to use what small influence I may have to induce you to deliver a lecture at Yale some time during the month of February. Having just graduated myself, I know the feeling that is prevalent in New Haven and can assure you that they would appreciate greatly having the pleasure of hearing you.

Yours sincerely,



202 Metropolitan Tower,  
November 8th, 1910.

My Dear Mr. Hammond;

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Yours sincerely,

*W. T. T. T.*

John Hays Hammond, Jr., Esq.,  
Lockout Hill,  
Gloucester, Mass.

Enclosure.



202 Metropolitan Tower,  
November 12th, 1910.

My Dear Mr. Hammond;

Replying to your letter of the 10th,  
I am very glad to know of at least one modest inventor.  
As I naturally surmise that your Papa would pay all  
our liabilities, I am willing to share in these.

I shall look to the pleasure of  
seeing you on your next visit to New York, when you  
will have an opportunity of seeing a magnificent little  
pump in my office.

Yours sincerely,

*H. T. T. T.*

John Hays Hammond, Jr., Esq.,  
Lockout Hill,  
Gloucester, Mass.



202 Metropolitan Tower,  
November 14th, 1910.

My Dear Mr. Hammond;

Judging from the enclosed, I think that you are playing a wireless possum. Notwithstanding your assurances, I will watch your progress and bring a friendly suit for infringement as soon as I ascertain that you are in funds.

Sincerely yours,

*A. Tesla*

John Hays Hammond, Jr., Esq.,  
Lockout Hill,  
Gloucester, Mass.

Enclosure.



Sept. 25(?) 1910

750

I understood from Mrs. Johnson that you are to dine with me on Thanksgiving Day but the time has not yet been fixed. Will you please drop me a note or phone so that there may be no misunderstanding?

Yours sincerely,

W. T. T. T.

R. U. Johnson, Esq., Editor,  
Century Magazine,  
32 Union Square, New York.



...of the Russian people  
...are Russian  
...so much upon Russia  
...of  
...of strongly contrasted  
...misery and splendor, of  
...and fast nations, coupled  
with weak achievements, that any intellectual  
effort proceeding from the empire is likely to  
be overestimated in the popular mind, just as  
a fairly good picture painted by an armless  
man with his toes is sure to find those who  
will acclaim it as a masterpiece.

But Russia had a literature before Tolstoy  
and before Maxim Gorky, and one well worthy  
of praise and admiration. Who would com-  
pare the flimsy tinsel of "Anna Karenina"  
with the solid grandeur of "War and Peace," or  
"Mutilki" with "Dead Souls"?

Nikolai Gogol was one of the really great  
writers, not only of Russia, but of his time.

BOSTON SUNDAY MORNING

Sept. 25(?) 1910







1500 Rhode Island Avenue,

Washington, D. C., February 16th, 1911.

Mr. Nikola Tesla,

Metropolitan Tower, New York.

My dear Mr. Tesla:

I have just had a most interesting conference with the leading government authorities in the Wireless Department, and they seem to think that the field I am working in is a most valuable one for naval work.

As you know, I am endeavoring to develop a short-distance non-interferable system for use in fleet action. I will have a 5 K.W. sending station and a flat-top aerial 118 feet high. Only distances up to 20 miles need be covered, and transmission of 20 words per minute is the maximum requirement, written message on Morse tape preferable. These are the Government requirements. Of course the great difficulties we have to contend with are forced oscillations, and atmospheric disturbances, neither of which can be eliminated by known methods of tuning, as neither Marconi's nor Fessenden's "Interference Preventive" seems to have been successful. By using a lot of power and a sensitive detecting device, with a stiff receiving circuit having a very high inductance or a very loose coupling, I think that we can eliminate much outside interference.

On the strength of our conversation at dinner the other night, I have become much interested in your idea of our forming a joint company such as the "Tesla-Hammond Wireless Development Company." (In thinking of this name I have followed Emersonian advice, and, as you see, attached my



2.

chariot to a Star.) The purpose of this Company would be to perfect an automatic selective system, to perfect the dirigible torpedo, and eventually to carry out your magnificent projects that will wirelessly electrify the world. My own endeavor up to the present time in the development of some practical dirigible torpedo apparatus will not be valueless, and my imagination has made me a believer and a devotee in the art of which you are the High Priest -- "Telautomatics." It is on these considerations that I think that a little, unpretentious company should be organized which may further the seeds of great possibilities.

On my return to New York I will call and see you and show you my idea for a selective system. If this idea of a small company to protect and develop our wireless patents appeals to you in the broad outline I have given you, do drop me a line here, and after having your consent I will communicate with my brother Harris and describe to him our plan.

Hoping that I am not monopolizing too much of your valuable time,

I am most sincerely yours,



(14)



202 Metropolitan Tower,  
January 6th, 1911.

Walter H. Bunnell, Esq.,  
76 Williams St., New York.

My Dear Sir;

Enclosed please find \$40. to apply  
against the Duffner claim.

I was very pleased to receive New  
Year greetings from him, from which I drew rather  
a favorable inference.

In a short time I am expecting to  
settle this matter in full.

Yours very truly,

*N. Tesla*

Enclosure.





202 Metropolitan Tower,  
December 30th, 1911.

Dear Mr. Duffner;

Although you have given me considerable trouble I cannot permit this trifle to interfere with my wishing you a Happy New Year in response to your Christmas greetings. Your card indicates prosperity and if I am not mistaken in my surmise I would recommend that you send a big fat check to relieve me in my present situation.

Yours very truly,

*N. Tesla*

C. J. Duffner, Esq.,  
Watertown, S. D.



WALTER L. BUNNELL,  
ATTORNEY AND COUNSELLOR AT LAW,  
78 WILLIAM STREET,

55 JOHN STREET

TELEPHONE, 5338 JOHN

CABLE ADDRESS, WALBUN  
WESTERN UNION CODE

NEW YORK, February 17/12

#153

Mr. Carl J. Duffner,  
Watertown  
South Dakota.

Dear Sir:-

Yesterday Mr. Tesla sent me another installment of \$40.00 and I am enclosing herewith my check to your order for \$30.00 of it.

Inasmuch as the debtor has now reduced his indebtedness to less than \$100.00, and aside from the fact that you requested it of me in a letter of a couple of months ago, I have made up a complete statement of the entire account and am enclosing the same herewith.

You will see from this statement that I have already collected from the debtor the sum of \$1105.00, and that of that sum I have sent you, in all, \$775.00; this leaves a balance still due to you of \$29.53 and such interest on that sum as may hereafter accrue; you will also see that, in order to make me whole, I should receive a further sum of \$42.31, and that the balance still due from the debtor is \$71.84, or the sum of these two amounts.

In computing the interest, I have used the method sanctioned by our Courts of computing the interest on the whole amount due from the due date to the date of first payment, adding same to the principal sum and then deducting the amount of the payment, the result being a new principal on which to compute interest, and then pursuing this method as the payments are made. The total amount of interest charges as thus computed is \$144.88, but inasmuch as this computation included the costs of the suit, the interest on these costs should be deducted, and doing so leaves the balance of the interest as stated, \$129.91. You will also note that I have credited you with the \$13.20 which you paid for the exemplified copy of the Judgment Roll in the Colorado action, and your interest includes the interest on that sum just the same as though it were a part of the principal.

In the beginning you sent me \$10.00 to cover disbursements but inasmuch as it actually cost me \$11.00 to secure service of a paper on Tesla, and which sum I could not make him pay to me, I have not taken that amount into consideration whatever, and we will consider it as cancelled by a set off.

Please let me know whether these figures are in accordance with yours? I expect to receive the balance of the amount due in a short time and I will then account to you further.

Yours very truly,

*Walter L. Bunnell*



NEW YORK, February 17/1912 190

M. Carl J. Duffner,

to WALTER L. BUNNELL, Jr.

ATTORNEY & COUNSELLOR AT LAW,

55 John Street, ~~20 WALL STREET~~

1908					
Jan'y	14	To the amount of your claim against Tesla with all accrued interest to date,	911	42	
		To amount paid by you for exemplified copy of your judgment against him,	13	20	
		To all accrued interest on these two <del>was</del> taken together, to date,	129	91	
		Total sum due,	\$1054	53	
		To amount of my charges, as agreed,	250	00	
		To total amount due you at this time,	\$ 804	53	
		To total amount already paid to you, as follows:-			
		Statement of December 22nd. 1909	\$320.00		
		1910, February 3rd.,	20.00		
		March 5th.,	20.00		
		April 27th.,	30.00		
		July 2nd.	25.00		
		July 29th.	20.00		
		Sept. 10th.,	25.00		
		Nov. 3rd.	30.00		
	1911	Jan'y 8th.	30.00		
		March 4th.,	30.00		
		April 29th.	25.00		
		July 8th.	70.00		
		Sept. 16th.	30.00		
		Nov. 11th.	40.00		
		Dec. 13th.	30.00		
	1912	Feb'y 17th.,	30.00	775	00
		Balance still due you,	\$ 29	53	
		STATEMENT OF MY CHARGES AND COSTS			
		To my charges as agreed,	\$250.00		
		To costs of suit,	107.34		
		To accrued interest on these costs	14.97		
		Total charges,	\$372.31		
		To sum retained by me thus far,	330.00		
		Balance still due to me	\$ 42.31	42	31
		To balance still due from debtor,	\$ 71	84	



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124

LONG ISLAND CITY

202 Metropolitan Tower,  
February 18th, 1911.

My Dear Mr. Hammond;

I was glad to receive your letter of the 16th and to know that the Government officials are waking up to the importance of your efforts. The exposition of your selective system is looked to with great interest. It would just break my heart if it should turn out that my own selective system is better than yours, notwithstanding the fact that I know it would make you happy for I have discerned that you are a gallant fellow.

The Tesla-Hammond combination looks good to me but we should have to go at it with some circumspection. I have already interested a gentleman who signs himself J.P.M. in a part of my wireless inventions and my friend Astor is now waiting for the completion of my plant to go into the wireless power transmission business which should be a colossal success. In the art of Telautomatics, however, I am perfectly free and would be glad to go into any fair proposition to exploit the field. I think that in a few years this departure will command the attention of the world.

I have just completed my turbines and am starting Monday to install them at the Edison plant where I expect to show them to you in operation on your next visit to the city.

With kind regards,

Very sincerely yours,

N. Tesla



## Wireless Control of Machinery Is Solved

Professor Branly Said to Have Perfect System of "Telemechanics" Operative at 150 Miles.

Paris, Feb. 18.—Professor Branly, who has just been elected to the Academy of Science, scoring over Madame Curie by the narrow margin of two votes, has, it seems, some remarkable schemes on foot as regards telemechanics, or the operation of machinery at a distance by wireless electricity.

The professor has not made any statement yet, but it appears that he has reached some conclusions which may solve the problem. One of them is to prevent the operations from being interfered with by electric storms. If his theory is ever applied to practice, it will be possible, apparently, to direct all the operations of a fort some one hundred and fifty miles away in time of war.

An operator from the Eiffel Tower would thus be able to discharge batteries or machine guns, and—what is more remarkable—by a peculiar series of reflected waves, he would be able to observe the effects of each discharge.

The practical field of this discovery would be immense. Engines could be set in motion at a distance, the working of machinery could not only be started and maintained, but could also be regulated and observed, by the distant operator;

Lamps could be lighted in lighthouses at a distance, and important operations conducted in mines without risking the lives of workmen or operators.



202 Metropolitan Tower,  
February 21st, 1911.

My Dear Mr. Harmond;

The enclosed will interest you.  
If we do not hurry up we may have nothing  
but skimmed milk left.

Yours sincerely,

N. Tesla

John Hays Harmond, Jr., Esq.,  
1500 Rhode Island Avenue,  
Washington, D.C.

Enclosure.



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TESLA LABORATORY  
LONG ISLAND N.Y.

202 Metropolitan Tower  
February 21st, 1911.

My Dear Mr. Hammond;

The enclosed will interest you.  
If we do not hurry up we may have no but skimmed milk left.

Yours sincerely,





THE LIBRARY OF CONGRESS

WASHINGTON, D.C. 20540

MANUSCRIPT DIVISION

June 4, 1990

Dear Mr. Anderson:

In response to your letter of May 14, we are enclosing a complimentary copy of Nikola Tesla's letter of February 21, 1911, to John Hays Hammond, as well as a copy of the newspaper clipping that accompanied that letter. The citation for the clipping is the Sunday American of February 19, 1911. These items are found in container 18 of the Manuscript Division's collection of the papers of John Hays Hammond.

Sincerely yours,

*James H. Hutson*

James H. Hutson  
Chief

Enclosure

Mr. Leland I. Anderson  
2525 South Meade Street  
Denver, CO 80219



## Wireless Control of Machinery Is Solved

Professor Branly Said to Have Per-  
fected System of "Telemechanics"  
Operative at 150 Miles.

Paris, Feb. 18.—Professor Branly, who has just been elected to the Academy of Science, scoring over Madame Curie by the narrow margin of two votes, has, it seems, some remarkable schemes on foot as regards telemechanics, or the operation of machinery at a distance by wire-  
less electricity.

The professor has not made any state-  
ment yet, but it appears that he has  
reached some conclusions which may  
solve the problem. One of them is to  
prevent the operations from being inter-  
fered with by electric storms. If his  
theory is ever applied to practice, it will  
be possible, apparently, to direct all the  
operations of a fort some one hundred  
and fifty miles away in time of war.

An operator from the Eiffel Tower  
would thus be able to discharge batteries  
or machine guns, and—what is more re-  
markable—by a peculiar series of re-  
flected waves, he would be able to ob-  
serve the effects of each discharge.

The practical field of this discovery  
would be immense. Engines could be set  
in motion at a distance, the working of  
machinery could not only be started and  
maintained, but could also be regulated  
and observed by the distant operator.

My Dear Mr. Hamr



## Wireless Control of Machinery Is Solved

Professor Branly Said to Have Perfected System of "Telemechanics" Operative at 150 Miles.

Paris, Feb. 18.—Professor Branly, who has just been elected to the Academy of Science, scoring over Madame Curie by the narrow margin of two votes, has, it seems, some remarkable schemes on foot as regards telemechanics, or the operation of machinery at a distance by wireless electricity.

The professor has not made any statement yet, but it appears that he has reached some conclusions which may solve the problem. One of them is to prevent the operations from being interfered with by electric storms. If his theory is ever applied to practice, it will be possible, apparently, to direct all the operations of a fort some one hundred and fifty miles away in time of war.

An operator from the Eiffel Tower would thus be able to discharge batteries or machine guns, and—what is more remarkable—by a peculiar series of reflected waves, he would be able to observe the effects of each discharge.

The practical field of this discovery would be immense. Engines could be set in motion at a distance, the working of machinery could not only be started and maintained, but could also be regulated and governed by the distant operator.



202 Metropolitan Tower,  
February 21st, 1911.

My Dear Mr. Hammond;

The enclosed will interest you.  
If we do not hurry up we may have nothing  
but skimmed milk left.

Yours sincerely,

*N. Tesla*

John Hays Hammond, Jr., Esq.,  
1500 Rhode Island Avenue,  
Washington, D.C.

Enclosure.



# Wireless Control of Machinery Is Solved

Professor Branly Said to Have Per-  
fected System of "Telemechanics"  
Operative at 150 Miles.

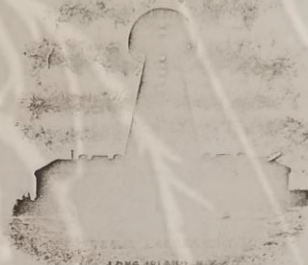
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An operator from the Eiffel Tower would thus be able to discharge batteries or machine guns, and—what is more remarkable—by a peculiar series of reflected waves, he would be able to observe the effects of each discharge.

The practical field of this discovery would be immense. Engines could be set in motion at a distance, the working of machinery could not only be started and maintained, but could also be regulated and observed, by the distant operator.

lamps could be lighted in workhouses at a distance, and important operations conducted in mines without risking the lives of workmen or operators.



LONG ISLAND

202 Metropolitan Tower,  
February 21st, 1911.

My Dear Mr. Hammond;

The enclosed will interest you.  
If we do not hurry up we may have nothing  
but skimmed milk left.

Yours sincerely,

*N. Tesla*

John Hays Hammond, Jr., Esq.,  
1500 Rhode Island Avenue,  
Washington, D.C.

Enclosure.



December 30, 1911.

Nikola Tesla, Esq.,  
1 Madison Ave.,  
New York City.

Dear Mr. Tesla:

I hope you will forgive me the liberty of troubling you at this time when I know it is so taken up with business matters. I have, however, been receiving numerous notes from one of the editors of the Scientific American, with whom I am personally acquainted, who is desirous of having a few minutes' conversation with you relating to the Turbine. He is writing for some of the important magazines a series of articles on "Prime Movers" and I think that it would be desirable from the advertising standpoint to have our turbine included in the article. If you can spare him a few minutes of your time he would put in statements of greater interest and accuracy than if he has to surmise about the advantages of your invention.

This gentleman's name is Mr. Waldemar Kaempffert, of the Scientific American, 361 Broadway. He will be glad to see you for a few minutes any time at your convenience. I will greatly appreciate any kindness that you can show him.

I called you up yesterday in regard to procuring a few photographs of your dirigible boat of 1899. I have been asked to write an article describing my apparatus, but, considering that it would be egotistical to mention my own work and not the achievements of others, I have decided to write an article which deals as comprehensively as possible with the work of all the other inventors in this art. Your own pioneer experiments would constitute a first chapter in the history of telautomatics, and any data or photographs of these experiments would enable me to treat them with the scope which they



(#2—H. T.)

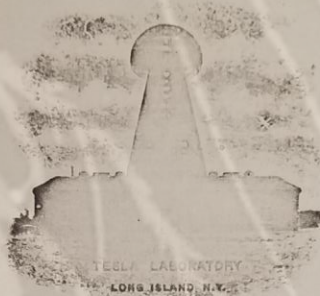
demand.

Again asking your forgiveness for the trouble to which I am putting  
you, believe me

Yours sincerely,

JHH, Jr./TB





202 Metropolitan Tower,  
January 1st, 1912.

My Dear Mr. Hammond;

Your letter of December 30th  
has just reached me.

While I am rather in favor of  
keeping low for the time being as regards the  
turbine, I shall be pleased to see Mr. Kaempffert  
of whom I know as an able correspondent, having  
read numerous articles from his pen.

In reference to my dirigible  
boats of 1898 and 1899 I have photographs some-  
where and if I can dig up one or two, you can  
have them. In attempting to write an imperson-  
al article you are showing good judgement. Give  
all the credit to others and take none for your-  
self and you will feel better for it afterwards.

With best wishes for a Happy  
New Year, believe me,

Yours sincerely,

*N. Tesla*

John Hays Hammond, Jr., Esq.,  
71 Broadway, New York.



ERMAN HERST...  
O BOX 1583  
JOCATON FL  
33429-0494

1993

SCARCE TLS BY NIKOLA TESLA

• 108

TESLA, NIKOLA (1856 - 1943). Croatian-born American electronics engineer and inventor. TLS. 8 1/2" x 11". 1p. Long Island. July 29, 1911. Interesting business letter on outstanding Tesla Laboratory letterhead depicting the lab's facilities on Long Island. In the letter, Tesla makes reference to a dynamo's being received, and General Electric's being behind in delivery of some equipment. "Dear Mr. Rowe; Referring to your letter . . . I am glad to say that the dynamo has been received. As you are familiar with the contract signed at your office, I hardly need call your attention to the fact that the General Electric Company is behind time in their delivery, which will make it impossible for me to furnish the turbine on time. Please call this fact to Mr. Sargent's attention so that he may be prepared for a reasonable delay. Yours very truly, N. Tesla." Arriving in the U.S. in 1884, Tesla was, for a short time, associated with Thomas Edison, until he left to devote his time to his own research projects for which he founded the Tesla Laboratory in New York. Tesla is best known for his invention, in 1888, of the alternating-current induction motor, on whose development advocates of alternating current had been working unsuccessfully for years. He was also responsible for many advances in the fields of high voltage and frequency apparatus. Among the items he developed were the Tesla coil, a system of arc lighting, a system of wireless transmission and a generator for high frequency currents. Date of receipt stamped twice in purple at top of page, one stamp immediately adjacent to the lab vignette. Tesla's signature is fresh and clean. Excellent. \$1,250.00



Dear Mr. Rowe;

Referring to your letter of July 29th and the dynamo mentioned therein, I am glad to say that the dynamo has been received.

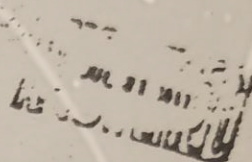
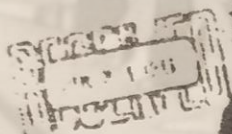
As you are familiar with the contract signed at your office, I hardly need call your attention to the fact that the General Electric Company is behind time in their delivery, which will make it impossible for me to furnish the turbine on time. Please call this fact to Mr. Sargent's attention so that he may be prepared for a reasonable delay.

Yours very truly,

N. Tesla  
20 Howard St., New York



3101



208 Metropolitan Tower,  
July 29th, 1911.

Dear Mr. Lane;

Referring to your letter of July 21st and the several telephone messages since, I am glad to say that the dynamo has been received.

As you are familiar with the contract signed at your office, I hardly need call your attention to the fact that the General Electric Company is behind time in their delivery, which will make it impossible for me to furnish the turbine on time. Please call this fact to Mr. Sargent's attention so that he may be prepared for a reasonable delay.

Yours very truly,

*W. T. Tash*

John C. Lane, Inquire,  
Sutton, Lewis & Povey,  
30 Church St., New York



Jan. 22, 1912.

Mr. Nikola Tesla,

202 Metropolitan Tower,

New York, N. Y.

Dear Sir:-

Under date of Nov. 12th you wrote us to the effect that the personal sketch previously sent by us for revision had not been received, and asked us to send the sketch again. This we did on Nov. 18th but have nothing further from you in regard to the matter. We, therefore, enclose the sketch again and will be greatly obliged to you if you will look it over and return with as little delay as possible, as we are now arranging our forms for the press.

Hoping to hear from you by return of mail, we are,

Very truly yours,

A. N. Marquis & Company.

N/NK



The following is produced from notes taken during an evening dinner at the Roosevelt Hotel in New York, March 24, 1955, with Muriel Arbus and Dorothy F. Skerritt.

We all met shortly after 5:30p in the lobby of the Roosevelt Hotel and then proceeded to the Coffee House in the hotel for dinner.

Dorothy Skerritt related that she secured her secretarial position with Tesla in 1912. M.S.J. had been his secretary up to this time, but this girl was somewhat overweight and did not have (or was not able to muster) the snappy ability which he demanded of those around him. It was discovered that M.S.J. overstated the charges on the articles of apparel which he instructed her to purchase for him. Not being too agile, she accidentally knocked over a small table in the office which crashed to the floor one particularly distressing day, clinching on the spot Tesla's decision to discharge her. The office messenger boys related to Miss Skerritt how she pleaded on bended knee to Tesla to retain her, but Tesla was too disturbed to consider it and ordered her out.

Following Miss Skerritt's interview with Tesla, she met one of the messenger boys who said, "You'll get the job."

"Why?" asked Miss Skerritt.

"Because you're thin and the other girl was clumsy," was the blunt reply.

"Those messenger boys can tell you a lot of information if you'll listen to them," remarked Miss Skerritt..."Yes, I should say so!" agreed Miss Arbus.

In a conversation with George Scherff (Jr.) earlier that afternoon, he related that his father, through the years, had assisted Tesla financially



(for hotel expenses, etc.) in a total amount of approximately \$40,000. I could tell, by the way Mr. Scherff expressed it, that there was some bitterness over the matter and guessed that it must have been a critical subject of family dissension. Miss Skerritt verified that Mr. Scherff gave Tesla this level of money, and said that "Tesla seemed to have Mr. Scherff hypnotized." Scherff would pay frequent visits to Tesla at his office at 8 W. 40th Street.

Paul Radosavljevich was a good friend of Tesla. "Wasn't he a prince of a fellow though," exclaimed Miss Skerritt.

"Whenever Bernard Behrend called on Tesla I had the most difficult time understanding him because of his Bostonian accent -- I just couldn't understand the man!"

There was a matter about which Fritz Lowenstein succeeded in making considerable profit at the expense of Tesla's radio inventions. Tesla drew Miss Skerritt close and whispered, as he always did when he had something important to say, "Miss -- Never trust a Jew! -- Never trust a Jew!"

"When Morgan Sr. was living, Tesla could get money from him just by asking for it. One day, he told me, 'I was walking down Wall Street and happened to see Mr. Morgan in his office through the second floor window. So, I went in and asked to see Mr. Morgan, and immediately I was ushered into his office. Mr. Morgan asked if he could write out a check for me and called for the boy to bring his book. Morgan signed a blank check and asked me to fill in the amount I needed -- it was \$30,000.'"



"I went down to see Mr. Morgan several times to get money for Tesla," related Miss Skerritt. "The first time I remember I was surprised that Mr. Morgan came out himself personally to see me when the note was given to him asking for money. He would also call for the money and hand it to me without any questions."

*L. Anderson*  
L Anderson





202 Metropolitan Tower  
May 22, 1912

John Hays Hammond, Jr., Esq.,  
71 Broadway,  
New York, N. Y.

Dear Mr. Hammond:

Thanks for your kind letter and article received which shows that you have done a great deal of work in the wireless field.

Not with the intention to criticise but merely to apprise you of facts, I would call to your attention that I have anticipated Thomson in the singing arc, as well as Poulsen in the silent arc giving undamped oscillations. I was also the first to bring out high frequency alternators and to use them. There is, therefore, little merit in Fessenden's effort in that direction. You will be surprised when I tell you that great many people have ridiculed me for proposing the employment of alternators in wireless at all.

As to Marconi's latest apparatus, it is in every important particular my own and now, since it is recognized that Hertzian waves are simply a loss and ineffective in transmissions at considerable distance, the frequencies I have advocated have also been settled upon. Not a suggestion of Hertzian methods and apparatus remains, my system having been universally adopted. Furthermore, incredible as it seems, no plant has as yet been produced to equal my performances in Colorado even in a remote degree, notwithstanding the fact that years have passed since.

Understanding that you are sailing within a day or two, I write to wish you a happy journey.

With regards, believe me,

Very truly yours,

*N. Tesla*



May 23, 1912.

Nikola Tesla, Esq.,  
1 Madison Avenue,  
New York City.

My dear Mr. Tesla:-

I am taking the liberty of sending you a short article which I have written for popular consumption, and in which I have mentioned some of your valuable work in the art.

Hoping that this will find you in the best of health, and with encouraging reports from the turbine, believe me,

Very truly yours,

Edo.



242 Metropolitan Tower  
November 27, 1912

My dear Lukac:

I think the man to write an article for you is Prince Lazerovitch for he knows more about the Balkan situation than any living man and is a good writer.

I see from a clipping just received that your magnificent Serbian translations are beginning to be appreciated.

You have not forgotten the engagement for Thursday evening, I suppose. Will you please let me know at what hour we are to meet and how many there will be.

Yours sincerely,

*R. U. Johnson*

R. U. Johnson, Esq.,  
Century Magazine,  
Union Square, New York.



RS

New York, N. Y., December 6, 1912

My dear Luka:

I am returning under enclosure your admirable poems as well as excerpt of your eloquent address before the School of Journalism. Luka Filipov did not show as much courage as you did in writing those verses about Panama.

I have received your book and in this connection I would like to make a suggestion. Could you not write a little poem on Montenegro which would add much to the value of the gift with which you intend to honor the King.

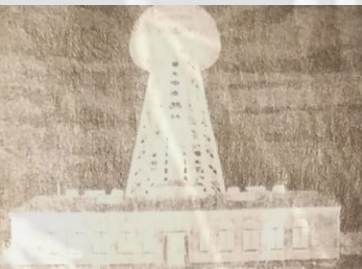
Thanks for your mention of my letter about Lazarovich. But just wait until somebody attacks you. I shall show you how I can write.

Yours sincerely,

R. U. Johnson, Esq.,  
Century Magazine,  
Union Square, New York

*R. U. Johnson*





TESLA LABORATORY  
LONG ISLAND, N. Y.

202 Metropolitan Tower  
January 9, 1913

R. U. Johnson, Esq.,  
327 Lexington Avenue,  
New York, N. Y.

My dear Luka:

Will you please read the stories of  
Svetozar Corovich which I am forwarding and which are  
now appearing in a Servian paper for the first time.  
You may find them interesting enough to use. In any  
event oblige me by returning the copies at your earli-  
est convenience.

I wish to remind you that you wanted to  
speak to me in regard to the telautomaton last Tuesday.  
I have before me your letter of January second but as  
there is so much to say about it it would be preferable  
to discuss the matter.

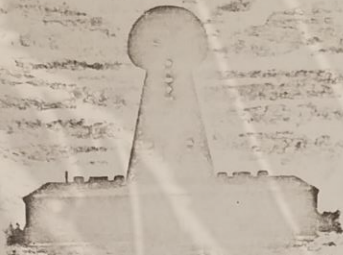
Hoping that you have enjoyed the evening,  
I remain as ever,

Yours sincerely,

N. Tesla

*Tesla's Wardenclyffe stationery  
taken on an ethereality  
character.*





202 Metropolitan Tower  
February 16, 1913

John Hays Hammond, Jr., Esq.,  
71 Broadway,  
New York, N. Y.

Dear Mr. Hammond:

I have had several conversations with my friend, R. U. Johnson, Editor of the Century, in regard to your recent experiments in telautomatics and have recommended to him to ask you to write an article for that magazine.

This would be an excellent opportunity and I think that you should avail yourself of the same.

Yours very truly,

*N. Tesla*



February 19, 1913.

Dear Mr. Tesla:-

I wish to express to you my deep appreciation of your kind recommendation of me to Mr. Robert Underwood Johnson.

It is needless to say that I feel particularly honored by your endorsement, having in mind, not only your scientific prominence, but also your unquestionable literary attainments.

Sincerely yours,

Nikola Tesla, Esq.,

Metropolitan Tower,


New York City, N. Y.



Machine Used *Riehle*

*60* thousand lbs

Tested by *James S. McGregor*

DIMENSIONS OF TEST PIECE			
ON TEST PIECE ACTUAL LOAD	FINAL	ORIGINAL	
Material			
Laboratory Test Number			<i>20939</i>
Mark on Test-Piece			<i>1</i> 
Shape of Test-Piece			<i>2</i> "
Gauged Length, in Inches			<i>8.00</i>
Diameter or Width, in Inches			<i>1.018</i>
Thickness, in inches			<i>.073</i>
Area, in sq. inches			<i>.0743</i>
Diameter or Width, in inches			<i>.758</i>
Thickness, in inches			<i>.0445</i>
Area, in sq. inches			<i>.0216</i>
Elongation, in $\frac{1}{8}$ inches			<i>5.1</i>
Per Cent. of Elongation			<i>42.7</i>
Per Cent. Reduction of Area			<i>94.50</i>
Yield Point, in pounds			<i>12540</i>
Maximum load, in pounds			<i>127160</i>
Yield Point, lbs per sq. in.			<i>168740</i>
Ultimate Strength, lbs per sq. in.			<i>228960</i>
Location of Fracture			<i>1/2" inside gauge</i>
Character of Fracture			<i>Silky</i>

NOTES: Slide Rule used for all computations, making load



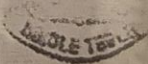
Columbia University  
the City of New York

ENGINEERING DEPARTMENT  
TENSILE LABORATORY  
RESULTS OF TENSION TESTS

MAY 11, 1913 -  
Made for N. Tesla, Esq.  
202 Metropolitan Tower,  
New York City

			Modulus of Elasticity		
37	38	39	Unit	Specimen #6	
+ E	S =	6 =	Load	Unit deformation	Modulus
			11138	.0001	28,400,000
800	800	800	22276	.00075	30,300,000
1012	1014	1015	33414	.0012	29,400,000
.067	.067	.066	44552	.0015	29,500,000
.0678	.0677	.06699	55690	.0018	29,600,000
.075	.075	.074	66828	.0021	29,700,000
.081	.081	.080	77966	.0024	29,800,000
.087	.087	.086	89104	.0027	29,900,000
.093	.093	.092	100242	.0030	30,000,000
.099	.099	.098	111380	.0033	30,100,000
.105	.105	.104	122518	.0036	30,200,000
.111	.111	.110	133656	.0039	30,300,000
.117	.117	.116	144794	.0042	30,400,000
.123	.123	.122	155932	.0045	30,500,000
.129	.129	.128	167070	.0048	30,600,000
.135	.135	.134	178208	.0051	30,700,000
.141	.141	.140	189346	.0054	30,800,000
.147	.147	.146	19495	.0057	30,900,000
740	740	740			
12900	12900	12900			
134800	134800	134800			
205000	205000	205000			
2 1/2" inside	2 1/2" inside	2 1/2" inside			
gauge	gauge	gauge			
Silky	Silky	Silky			

Average modulus 29,500,000



Correct within 10 lbs. and other results exact.

19495 lbs.  
124000 lbs.



Machine Used *Ricco*

60 thousand lbs

Tested by *Louis L. Macgregor*

Columbia University  
in the City of New York  
CIVIL ENGINEERING DEPARTMENT  
TESTING LABORATORY  
REPORT OF TENSION TESTS

May 11, 1913

Made for *N. Teala, Esq.*202 Metropolitan Tower,  
New York City

DIMENSIONS OF TEST PIECE	Steel						Modulus of Elasticity		
	20457	36	86	37	38	39	Unit Load	Stress	Modulus
ORIGINAL	1	2	3	4	5	6	11158	2004	28 400 000
SHAPE OF TEST PIECE	1	2	3	4	5	6			
Gauged Length, in inches	8.00	8.00	8.00	8.00	8.00	8.00	22.276	2004	30.3
Diameter or Width, in inches	1.018	1.012	1.019	1.012	1.014	1.015	23.314	2004	27.4
Thickness, in inches	.073	.072	.072	.067	.067	.066	23.314	2004	27.4
Area, in sq. inches	.0743	.0729	.0753	.0678	.0677	.06699	23.314	2004	27.4
Diameter or Width, in inches	.258	.250	.253	.245	.245	.245	23.314	2004	27.4
Thickness, in inches	.045	.042	.043	.040	.040	.040	23.314	2004	27.4
Area, in sq. inches	.0226	.0214	.0227	.0207	.0208	.0205	23.314	2004	27.4
Elongation, in inches	5	5	5	5	5	5	23.314	2004	27.4
Per Cent. of Elongation	5	5	23	13	11.0	2.0	23.314	2004	27.4
Per Cent. Reduction of Area	2.7	5.7	7.2	7.5	4.4	1.2	23.314	2004	27.4
Yield Point, in pounds	9250	16650	13640	740	7850	12450	23.314	2004	27.4
Maximum Load, in pounds	12540	16650	17700	13900	7110	7800	23.314	2004	27.4
Yield Point, lbs. per sq. in.	12710	228460	100 000	104 500	71390	155200	23.314	2004	27.4
Ultimate Strength, lbs. per sq. in.	65750	228460	241 450	205300	104 650	220250	23.314	2004	27.4
Location of Fracture	1/2" inside gauge	1/4" gauge mark	near middle	1/4" inside gauge	1/2" inside gauge	2" inside gauge	23.314	2004	27.4
Character of Fracture	Silky	Silky	Silky	Silky	Silky	Silky	23.314	2004	27.4

NOTE: Slide Rule used for all computations, making load calculations correct within 10 lbs. and other results exact.

1913 979  
124 000 20. 1000



## HAMMOND RADIO CONTROLLED BOAT SUCCESSFUL.

Army and navy experts have reported the device of John Hays Hammond, Jr., for radio control of surface craft to be sent laden with explosives against enemy ships, a success, and predict similar results with submerged craft.

Secretary Baker wrote the House appropriation committee recently that the joint army and navy board was "convinced of the practicability of the control" of the surface craft, and added that there had also been demonstrations of the possibility of the control to a craft, completely submerged, except for an air in-take pipe.

Before finally deciding on the purchase of the patents for \$750,000 the board desires further experiment with the submerged craft.

Construction of the submerged craft, which will be about 80 feet long by 7 feet in diameter, will take two years, according to Mr. Hammond, who told the committee, he had spent ten years and \$400,000 on his invention.

"The board considered the ability of the enemy to interfere with the control of the vessel by radio energy. Mr. Hammond's claims are that no interference can be had with the craft outside a radius of 100 to 150 yards from the source of the energy; that is, from the radio plant of a battleship, for example."

Major-General F. W. Coe said he had run the craft "all around vessels coming into the harbor at will." Mr. Hammond said an aviator after four hours' training on control, was able from a height of 9,000 feet and a distance of six or seven miles to exercise absolute control over the high-speed boat.



February 19, 1914.

Nikola Tesla, Esq..

1 Madison Avenue,

New York City.

My dear Mr. Tesla:-

I am enclosing under separate cover a popular article regarding my work, published in McClure's for March.

I wish to state that I feel rather badly about the treatment given me by the Editorial Department of McClure's. I laid particular emphasis on the fact that I wished to give due credit to other inventors along this line of work.

You have probably received many newspaper clippings relative to my work and mentioning your name. A picture of your telautomaton was to be published with this article, with reference which I made of your being the pioneer in this work in the United States. However, this matter and a number of other important modifications made by me were quite ignored by McClure's, and the whole thing rushed feverishly into print.

I am

Yours sincerely,



Thanking

Yr

MEADOWCROFT.

Sumner

June 22, 1914.

Dear Mr. Edison,

Permit me to extend to you and your family my hearty and respectful congratulations. I hope sincerely that the marriage of your charming daughter will prove the beginning of a new life of undisturbed happiness.

Trusting that you are carrying on your valuable work in the full enjoyment of mental and bodily vigor I remain as ever

Yours faithfully

N. Tesla



The Waldorf-Astoria  
New York.

April 27. 1915.

Rev. Frederic R. Marvin

537 Eastern Avenue

Albany  
N. Y.

Reverend Sir,

Replying to your letter  
of 24<sup>th</sup> inst. I should say  
that death by Electricity must  
be absolutely painless, provided  
that the apparatus is devised



and the electric force applied  
by a skilled expert. The  
cessation of the life process  
takes place in an interval of  
time so short that conscious  
feeling is out of the question.

But if the work is not competently  
done the unfortunate individual  
may be made to endure frightful  
pain.

Respectfully yours

Nikola Tesla





8 West 12th Street  
New York, N. Y.  
September 29, 1915

Benjamin P. Miessner, Esq.,  
Purdue University,  
Lafayette, Indiana


My dear Sir:

Your favor of September 24th has been received in due course and has interested me in view of your forthcoming book on "Radio Dynamics". Some time ago my friend, Charles E. Speirs of the D. Van Nostrand Company, told me that you were engaged in its preparation and I commended it for publication as very little has been written on the subject. Personally, I believe that the name is not the very best as it conveys the idea that radiations are, if not motive, at least the controlling agent, while, as a matter of fact, such is not the case.

I am naturally greatly absorbed in this field of invention which has been barely touched and which I look upon as extremely promising. In an article in the Century Magazine, copy of which I am forwarding to you, I have related the circumstances which led me to develop the idea of a self-propelled automaton. My experiments were begun sometime in '92 and from that period, on, until '95, in my Laboratory at 35 South Fifth Avenue, I exhibited a number of contrivances and perfected plans for several complete telautomata. After the destruction of my Laboratory by fire in '95, there was an interruption in these labors which, however, were resumed in '96 in my new Laboratory at 46 East Houston Street where I made more striking demonstrations, in many instances actually transmitting the whole motive energy to the devices instead of simply controlling the same from distance. In '97 I began the construction of a complete automaton in the form of a boat, which is described

[15, 735]





Benjamin F. Messner, Esq.

-2-

in my original patent specification #613,809. A copy of this, also, is being forwarded under separate cover. This application was written during that year but the filing was delayed until July of the following year, long before which date the machine had been often exhibited to visitors who never ceased to wonder at the performances. The drawings of this specification were made from this machine to scale. In that year I also constructed a larger boat which I exhibited, among other things, in Chicago during a lecture before the Commercial Club. In this lecture I treated the whole field broadly, not limiting myself to mechanisms controlled from distance but to machines possessed of their own intelligence. Since that time I have advanced greatly in the evolution of the invention and think that the time is not distant when I shall show an automaton which, left to itself, will act as though possessed of reason and without any wilful control from the outside. Whatever be the practical possibilities of such an achievement, it will mark the beginning of a new epoch in mechanics.

I would call your attention to the fact that while my specification, above mentioned, shows the automatic mechanism as controlled through a simple tuned circuit, I have used individualized control; that is, one based on the co-operation of several circuits of different periods of vibration, a principle which I had already developed at that time and which was subsequently described in my patents #723,188 and 723,189 of March, 1903. The machine was in this form when I made demonstrations with it in 1898 before the Chief Examiner, Seeley, prior to the grant of my basic patent on Method of and Apparatus for Controlling Mechanisms at a Distance.

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Benjamin F. Miessner, Esq.

-3-

In my experiments and investigations in Colorado from 1899 to 1900, I developed, among other things, two important discoveries which will be essential in the future development of telautomatics. They are described in my patents #685,953 and 119,732 which were taken out at a later date. These two advances make it possible to supply to an automaton great amounts of energy and also to control it with the utmost accuracy when it is entirely out of sight and at any distance.

During the past few years I have devoted much of my time to the perfection of a small, high speed vessel and have developed a new form of prime mover which makes it possible to develop several horsepower for each pound of weight and in my latest designs I am embodying this new machine together with certain new means of propulsion in an endeavor to produce a most effective weapon of defense, such as would seem to be at this time of paramount importance to the United States.

I may be able to respond to your request to furnish you one or two illustrations but am so driven with important work that it would be next to impossible for me to prepare material, myself, for publication in your book which I hope will prove a complete success.


Yours very truly,

*H. Tesla*

P/S- I have added to the material forwarded, a few other specifications which might be of interest to you in this connection.

Reproduced from the collection of the National Archives, Library of Congress





8 West 40th Street  
New York, N.Y.  
October 8, 1915

Benjamin F. Miessner, Esq.,  
Purdue University,  
Lafayette, Indiana

Dear Mr. Miessner:

I have duly received your favor of the third instant and wish to thank you for your appreciation of my work, as well as for the delightful frankness with which you have expressed yourself in regard to my mental balance. This is news to me as all my intimate friends, some of whom are men of great achievement, are never ceasing in telling me just the opposite.

It also pleases me to note your receptiveness and enthusiasm which augurs well for your future success.

Perhaps you are right in the choice of the title for your work. My objection to the word is that it implies control by radiations while the art requires a different agency for successful practice.

You are, of course, welcome to make such quotations from my records as you see fit. I will probably be able to send you a couple of photographs giving views of automata I constructed and exhibited.

As to your kind offer to honor me, I am very much obliged to you for the same but I believe that it will be much better for the success of your book not to give too much prominence to any contemporary. Mr. Speirs is a

5,745]



Benjamin F. Miessner, Esq.

-2-

man of unerring judgment in this respect and you can do  
no better than follow his advice.

Wishing you the best success in what you have  
undertaken and looking to the pleasure of meeting you, per-  
sonally, some time, I remain,

Very truly yours,

*N. Tesla*





8 West 40th Street  
New York, N. Y.  
November 8, 1915

B. F. Miessner, Esq.,  
Purdue University,  
Lafayette, Ind.

Dear Mr. Miessner:

In arranging my correspondence in a new office just installed, I ran across a letter from you dated July 2d, 1914 which, so far as I can find, has not been answered and must have been overlooked. Please accept my apologies for the seeming neglect. It is my rule to always answer promptly communications from inventors and members of my profession.

In accordance with promise expressed in my letter to you of October eighth, I have had three prints prepared showing two of my teleautomata which have been exhibited on frequent occasions from 1897 to 1899. They have been forwarded to Mr. Spreirs of the D. Van Nostrand Company who will no doubt communicate with you in regard to them.

Believe me,

Yours very truly,

*A. Tesla*

[AC 10, 725]



Franklin  
July 28

MEADOW CROFT.

Sumner

June 22. 1914.

Dear Mr. Edison,

Permit me to extend to you  
and your family my hearty and  
respectful congratulations. I hope  
sincerely that the marriage of your  
charming daughter will prove the  
beginning of a new life of undisturbed  
happiness.

Trusting that you are carrying  
on your valuable work in the full  
enjoyment of mental and bodily  
vigor I remain as ever

Yours faithfully  
N. Tesla



The Waldorf-Astoria  
New York.

March 4, 1915.

James L. Carmichael Esq. 112 Bleeker Street  
Newark N. J.

Dear Sir,

Owing to change of affairs my correspondence is hampered, otherwise I would have answered your letter before.

You had in this case probably a frequency of about 150 and the heating of the transformer could be easily explained, but your letter is not clear enough on this point.

You know of course that I have patented years ago a machine in which one element was energized by currents of differing phase giving a rotating field in which an armature was



rotated usually in a direction opposite  
to that of the field. This plan  
is now utilized in the so called  
Saldschmidt high frequency system  
for wireless. There is nothing novel  
in it.

Yours very truly

N Tesla



Feble refers to his patent  
# 390,721

Oct. 9, 1888

Dynamos - Electric Machine



# THE ELECTRICAL REVIEW

[ILLUSTRATED.]

## A WEEKLY JOURNAL OF ELECTRIC LIGHT, TELEPHONE, TELEGRAPH AND SCIENTIFIC PROGRESS

Vol. 8, No. 24,  
WEEKLY.

NEW YORK, SATURDAY, AUGUST 14, 1886.

Copyright, 1886, by ELECTRICAL REVIEW PUBLISHING COMPANY, 21 Park Row, New York.

Entered at Post Office, New York, as Mail Matter.

### Electrical Flying Machine.

A recent despatch from Berlin states that the success of the account of L. Hottel and his companion in making in a balloon the journey across the Channel from Cherbourg to London has caused no little excitement there. It is the first successful attempt to reach a point determined on beforehand, and indicates a decided advance in aeronautics, which will be put to good use in a coming war. Germany and Russia have both for some time been pushing forward experiments in the flying machine for use in war or otherwise. The direction in which they have been working was the one which, previous to the experiment just made by L. Hottel in the balloon Torpilleur, was most likely to be successful. It ignored the idea of the inflated gas-bag, which is enormous in size, difficult and costly to fill in war, and floats—a gigantic derelict—at the mercy of every current of air, a huge mark for the first gunner who can hit and bring it to the ground.

Baumgarten in Germany and Baranowski in Russia have adopted the principle of the inclined plane pressed against the air, and thus capable of making some attempt, at least, to regulate its own course. In the kite the force that presses the inclined plane is the hand of the boy acting through the string. In the sail of the boat the resistance of the water to side-long motion keeps the sail pressed against the wind. In the flying machines of Baumgarten and Baranowski the pressure is given by an engine carried by the machine and acting by means of fans. The difficulty was the weight of the engine and the fuel; but with the development of

practical knowledge of electricity accumulations have been built which supply the maximum of motive power with the minimum of weight. If the attempts should prove successful, the problem of flying in still air would, it is thought, be solved. But whether men shall ever be able to ride the storm is another matter.

### The Tesla Electric Light Company.

This company has been organized nearly two years, and has devoted that time to perfecting a complete arc-light system, which we take pleasure in presenting to the readers of the REVIEW in this issue. The headquarters of the company are in Rahway, N. J., and a branch office in New York. The president of the company is Mr. B. A. Vail, of Rahway; vice-president and treasurer, Robert Lane, of East Orange; secretary, H. C. Carmen; electrician, N. Tesla. The particular improvements that are claimed for this system relate to the efficiency, the regulation and the safety. There are a number of novel features, particularly in the construction of the machine and its regulation.

In the illustration, Fig. 1, is given a side view of the Tesla dynamo. The magnetic frame of the machine is so constructed as to concentrate the greatest amount of developed magnetism upon the armature. To this end the cores of the field magnets are made in-

terlocking, and the magnetic frame is the smallest in section at the middle. The magnetism is in this way, the inventor states, con-



FIG. 2.—VIEW OF TESLA ARC LAMP.

currents in the armature core; and also to reduce to a minimum the resistance of the inactive wire on the sides of the armature, and to balance both parts of the armature. The shape of the armature is so calculated that these objects are obtained.

Mr. Tesla, the inventor, has obtained broad patents on the regulation of a dynamo machine on entirely novel principles. This method of regulation secures advantages in the way of economy and safety that he is confident are peculiar to this system alone. No auxiliary resistances, or opposing coils, are used, and the regulation is effected without waste of power.

In Fig. 2 is shown a view of the Tesla arc lamp. The main objects desired to be secured by the inventor, were first of all, simple and reliable apparatus; preventing the vibrations of the movable carbon in consequence of the fluctuations of the current; then to obtain a perfect feed and a steady light. The lamp cuts itself out and in without the aid of any auxiliary apparatus. The action of the magnets of the lamp is so delicate that the feeding is imperceptible.

The design of the lamp frame is neat, and the lamp is substantial and reliable.

This system is now in daily use on the streets of Rahway, N. J., where all visitors are privileged to see it at work. The company is now constructing a number of large machines, and is ready to go before the general public with an arc light system that will, no doubt, meet with great favor.

Perspicacity and Prudence Combined.  
"What's the matter, Jones? You look

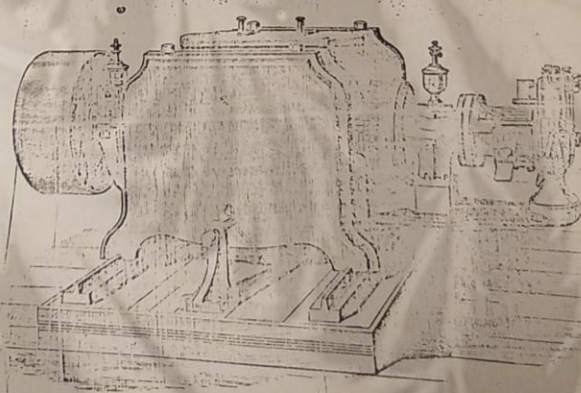


FIG. 1.—VIEW OF DYNAMO OF TESLA ELECTRIC LIGHT COMPANY.

centrated upon the middle; the central line is sharply defined, and a better working of the armature is obtained. The main improvements claimed are, however, embodied in the construction and winding of the armature which is supported upon a separately cast base piece, fastened to the lower core by means of fusible dia-magnetic material. The object of the construction is to reduce to the minimum the development of Foucault's

disgruntled." "No wonder; Battersby just now called me liar." "And you didn't knock him down?" "No, he was at the other end of the telephone."

The electric headlight of the Akron, Ohio, Company, is said to have met with much favor recently among railroad men, and several of the leading roads are thinking of adopting it.

The Garden of Eden.

(Interesting and

Mr. Alex. Brush Company has just returned from a tour in the West. Kempt says that so busy at the where there is offer comp-d chinery, when work, was as chine anywhere more than any. Locally, the this agency i plants have be otherwise state Kirby Carpen

new, Mich H. Whitbeck Wis. .... City of Escan Ashland City Wis. .... (this is a dupl Waupaca City

ditional.. Black River F Franz Falk Home, M

Eau Claire, W La Crosse, W Aberdeen, Da Grand Forks,

The above Several contra natures, but N these until the reasons.

THE FO The Fort W Western agent the Montauk and satisfact erywhere, ex shore, the be this company system is exen extremely sings at Orang in portions of the company Hannibal, Mo W. T. Chelte Litchfield, Il cisco, and man origio.

One special people is the t arm, with wh ing. While t pension of las will try the ex Jenny Compa mands of high The McIner Company



p. 24.  
y.

NEW YORK, SATURDAY, AUGUST

, by ELECTRICAL REVIEW PUBLISHING COMPANY, 23 Park Row, New York.

Euter

## al Flying Machine.

atch from Berlin states that the aeronaut L'Hoste and his taking in a balloon the jour-Channel from Cherbourg to ed no little excitement there. cessful attempt to reach a l on beforehand, and indi- l advance in aeronautics, ut to good use in a coming and Russia have both for pushing forward experi- ing machine for use in war he direction in which they ng was the one which, pre- iment just made by L'Hoste rpilleur, was most likely to lt ignored the idea of the which is enormous in size, to fill in war, and floats— t—at the mercy of every ge mark for the first gun- d bring it to the ground. Germany and Baranovski pted the principle of the ed against the air, and aking some attempt, at s own course. In the resses the inclined plane boy acting through the of the boat the resistance le-long motion keeps the the wind. In the flying ngarten and Baranovski n by an engine carried by acting by means of fans. the weight of the engine with the development of ge of electricity been built which mum of motive nimum of weight. ould prove suc- lem of flying in

pering, and the magnetic frame is the small- est in section at the middle. The magnet- ism is in this way, the inventor states, con-

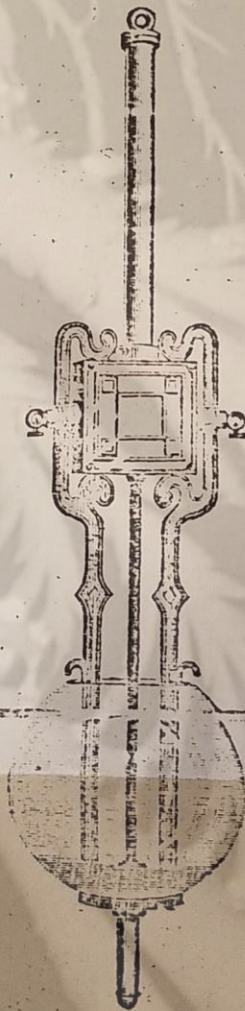


FIG. 2.—VIEW OF TESLA ARC LAMP.

currents in the armature to reduce to a minimum the inactive wire on the sides of t to balance both parts of the shape of the amature is so these objects are obtained.

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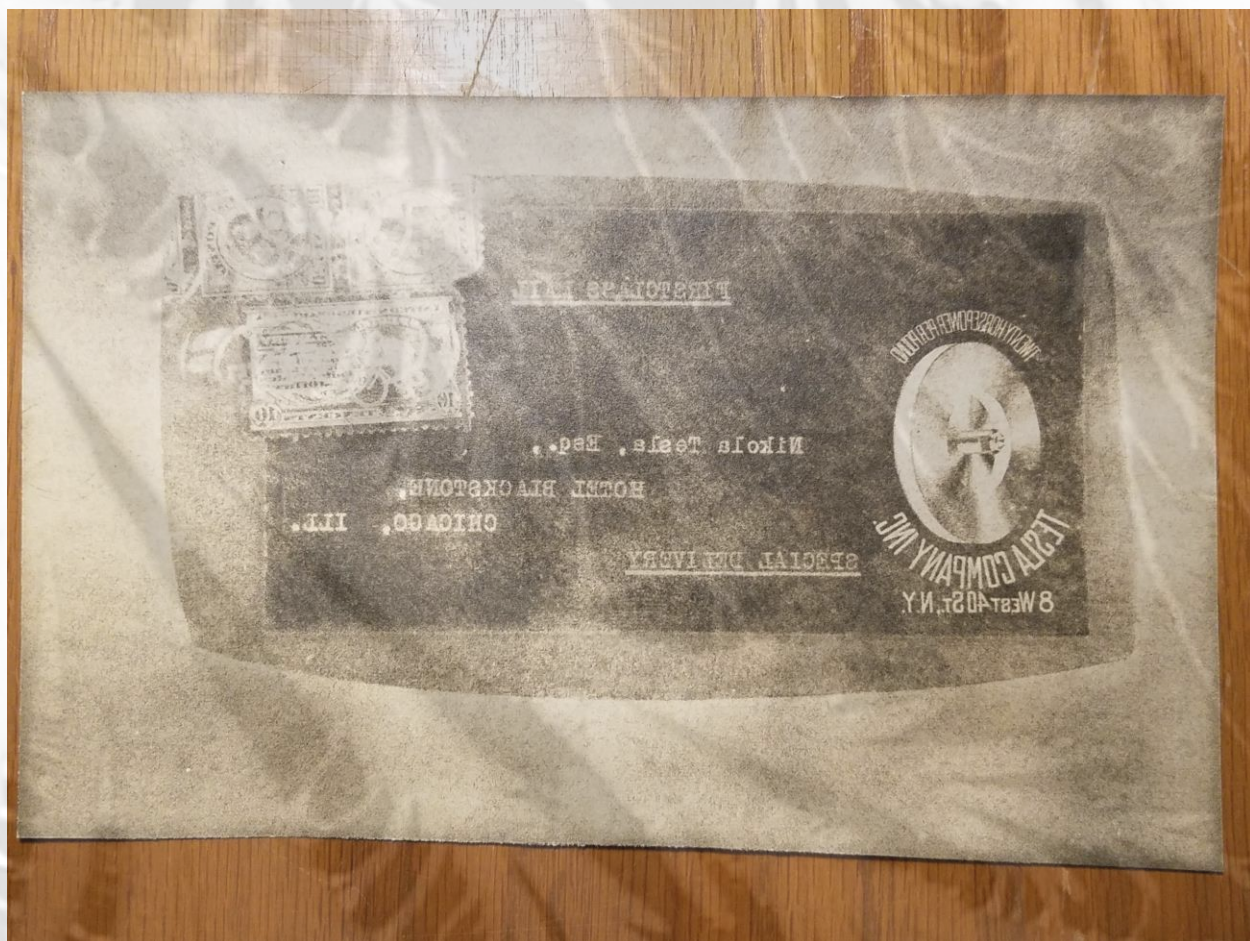
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This system is now in streets of Rahway, N. J., are privileged to see it at pany is now constructing a machines, and is ready to ge eral public with an arc light no doubt, meet with great fa

Perspicacity and Prudent  
"What's the matter, Jon







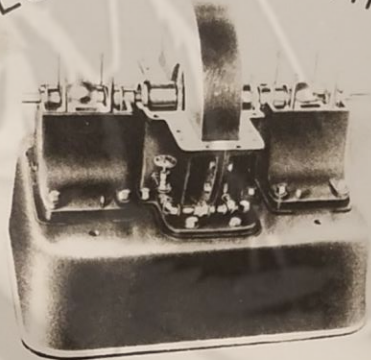






TESLA COMPANY, INC.

STEAM AND GAS TURBINES  
BLOWERS COMPRESSORS  
VACUUM PUMPS FOUNTAINS  
MECHANICAL OSCILLATORS  
PRECISION INSTRUMENTS



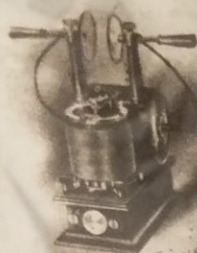
HIGHFREQUENCY DYNAMOS  
LIGHTNING PROTECTORS  
INTERFERENCE PREVENTERS  
OSCILLATION TRANSFORMERS  
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NEW YORK, 8 WEST 40TH ST.  
TEL. 23 VANDERBILT









OSCILLATION TRANSFORMER



INDUCTION MOTOR



NIKOLA TESLA  
COMPANY

8 West 40<sup>th</sup> St.  
TEL. 9090 BRYANT  
NEW YORK



TELAUTOMATON



STEAM & GAS TURBINE



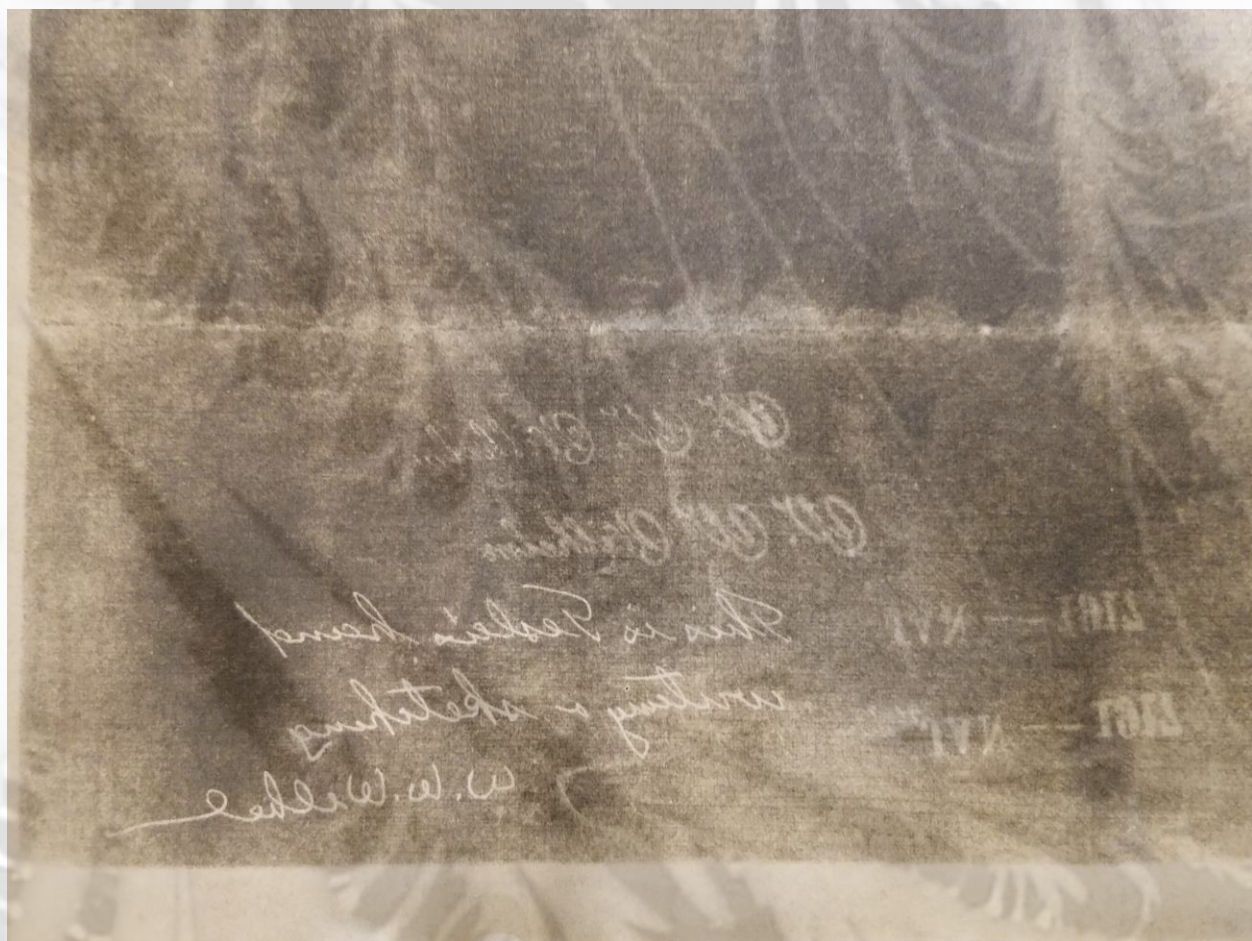






W. W. Wilke  
writing & sketching  
this in Federal hand  
Oct. 27, 1911  
1911 - 1911

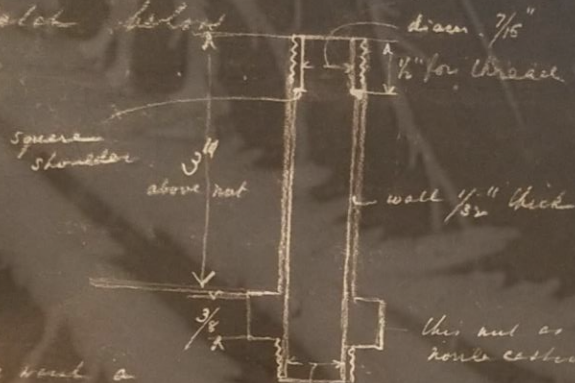






## Work to be done

- 1) New regulator piece of special metal (bar on table) to be made same as old piece but of different dimensions as indicated in sketch below



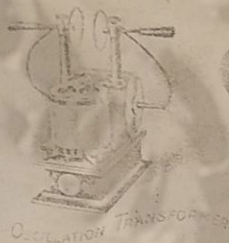
Note we want a nut on top of some metal. (Find old nut in vault)

this nut as large as possible casting will permit

9/16" diam. polished hole

- 2) Turn up and finish the two nozzle castings all except inside holes ✓
- 3) Carbon friction contact on pulley of motor for regulating speed then grinding ✓
- 4) finish latest armature (mild fiber pieces 1/64" smaller than iron (has already started) ✓
- 5) new fiber bushing for lower roller (already started) ✓
- 6) Make ready for balancing old rotor and armature, also prepare for grinding the nose ✓
- 7) Make two square flanges to slip on the frame now used for winding coils (as explained in story) ✓

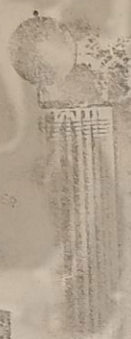




OSCILLATION TRANSFORMER



INDUCTION MOTOR



WIRELESS TELEGRAPH STATION



TELAUTOMATON

STEAM & GAS TURBINE

NIKOLA TESLA  
COMPANY

8 West 40th St.  
TEL. 9090 BRYANT

NEW YORK, March 18, 1919

Edward T. Jones, Esq.,  
818 Roosevelt Place,  
New Orleans, La.

Dear Sir:

Your favor of the 4th inst. has been forwarded to me through the courtesy of the Electrical Experimenter Pub. Co. and would have been answered promptly had it been possible. I am at present so busily engaged that I have hardly any time for correspondence.

Complying with your request I am forwarding under separate cover a photograph, also a copy of my article in the February issue of the Electrical Experimenter. Transmission through the ground as through a wire is the underlying principle of my wireless system that I have advocated for years. I shall, therefore, look with special interest to your forthcoming book. \*

Believe me,

Yours very truly,

*N. Tesla*

\* Sold the Book on "Under ground Reception" to Gernsback for \$500.00.

Antique Wireless Assoc.  
HISTORICAL MUSEUM  
W21GE-Curator



Work to be done

- 1) New regulator piece of special metal (bar on table) to be made same as old piece but of different dimensions as indicated on sketch below

Note We want a  
nut on top of same  
metal. (Find old  
nut in vault)

this nut as large as  
nossle casting will permit

- 2) Turn up and finish the two nossle castings all except inside holes
- 3) Carbon friction contact on pulley of motor for regulating speed when grinding
- 4) finish latest armature (mill fiber pieces  $1/64$ " smaller than iron (this already started)
- 5) New fiber bushing for lower oil chamber (already started)
- 6) Make ready for balancing old rotor and armature, also prepare for grinding the new
- 7) Make two square flanges to slip on the form now used for winding coils (as explained to Fotty)



Chicago Ill  
Mar 3-1954

Dear Mr. Anderson,

I was away from my office therefore could not answer any sooner.

Yes. I worked for the Pyle National Co in 1917 and that's where I met Mr. Tesla, and was his right hand man for 9 months. We worked on his turbine.

I cannot write of my experiences with him, as there are too many of them, but should you ever be in Chicago we could get together and you would have a story.

I am sending you everything I have on him and want to be credited with it.

I would like to know how you got the information about me, as I was contacted some time ago by other people here in Chicago.

I Remain  
Yours Truly

W.W. Wilhelm

2821 So. Lawndale Ave

Chicago 23-Ill.













Dear Mr. Scherff:

Under enclosure please find letter  
from Mr. Tesla.

Respectfully,

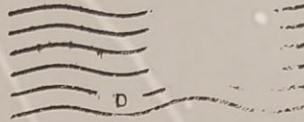
A handwritten signature in cursive script, appearing to read 'G. Scherff'.

George Scherff, Esq.,  
17 Battery Place,  
City.





RETURN  
TO  
NICHOLA TESLA CO.  
8 West 40 St. N.Y.



George Scherff, Esq.,  
17 Battery Place,  
City.  
c/o Union Sulphur Co.





# SERB NATIONAL FEDERATION

LARGEST AMERICAN FRATERNAL SOCIETY OF SERBIAN ANCESTRY

СРПСКИ НАРОДНИ САВЕЗ

3414 FIFTH AVENUE

PITTSBURGH, PA., 15213

December 9, 1978

Mr. Leland Anderson  
2525 So. Meade Street  
Denver, Colorado 80219

Dear Leland:

Per your letter and request of November 28, 1978, enclosed herewith, please find a Photo-Negative, 4 X 5, of the letter in which Nikola Tesla identifies himself as Serbian in culture and heritage.

As I informed you the original is in our safe in the Serb National Federation office.

In addition, I am extremely thrilled to hear that the Nikola Tesla Biography\* will be published next year, tentatively in the Spring.

If I can be of any further assistance, feel free to call.

Fraternally and sincerely,

SERB NATIONAL FEDERATION

*Robert Rade Stone*

Robert Rade Stone  
Supreme President

RRS:nk

Enclosure

\* i.e., Bibliography



NOTICE FOR THIS MAIL WAS  
LEFT WHEN SPECIAL DELIVERY  
SERVICE WAS ATTEMPTED

**SPECIAL DELIVERY**



SERB NATIONAL FEDERATION  
3414 Fifth Avenue  
Pittsburgh, Pa. 15213

Mr. Leland Anderson  
2525 So. Meade Street  
Denver, Colorado 80219

**POSTAGE DUE 25**



**SPECIAL DELIVERY**

**FEE CLAIMED BY OFFICE  
DENVER, COLORADO**



NEGATIVE COURTESY

SERB NATIONAL FEDERATION

PITTSBURGH

DECEMBER 9, 1978



SS

8 W. 40 St., New York, June 11, 1921

George M. Mungas, Esq.,  
Box 37,  
Philipsburg, Montana

My dear Sir:

I have duly received your kind letter of May 31st and wish to thank you for the interest manifested.

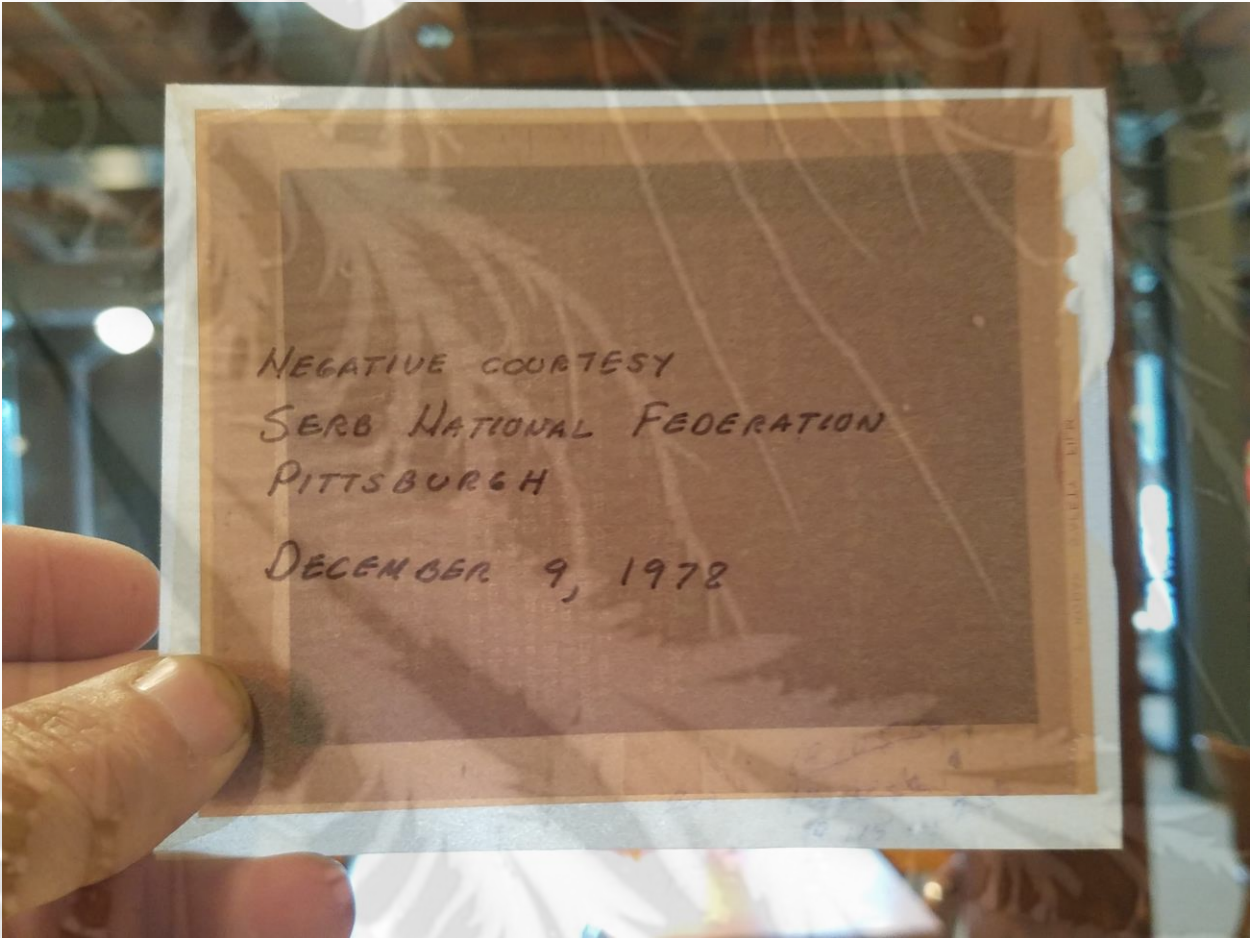
Of course you know that I am a Serbian, coming from the oldest stock inasmuch as my mother's name can be traced almost as far back as any other in our race. The Editor of the Kansas Farmer and Mail and Breeze does not quite realize that the Province where I was born was at that time merely under the political rule of Austria which has nothing to do with nationality.

Wishing again to assure you that I have appreciated your friendly action in the matter, I remain

Yours very truly,

*N. Tesla*



A hand is holding a Polaroid photograph of a negative slide mount. The slide mount is a rectangular piece of light brown paper with a darker brown rectangular area in the center. The text is handwritten in black ink on the slide mount. The background of the Polaroid is a blurry indoor setting with some lights.

NEGATIVE COURTESY  
SERB NATIONAL FEDERATION  
PITTSBURGH  
DECEMBER 9, 1978



Leland I Anderson

Dec 14 58

1615 E River Terrace  
Minneapolis Minnesota.

Dear Mr Anderson

Glad to receive your letter and particularly to receive the letter head and to see that you are really interested in the great man Tesla.

No one today knows him like I do

Was just thinking . ( About 1925 I said to Mr Tesla , - I see that they are working on something that they are calling TELEVISION he said that he knew about it but they are all wrong they cant send it three dimentional it will be a flat picture. he said and I hope I quote correctly( What I want to do is , - when I have a person who is blind in the eyes and the optic nerve is still good , by electrical impulses I will sensitize the optic nerve and they will see three dimentional. by putting a device on the temple. Last september I was reading in the paper and I think I have the clipping some place that states that they are trying it.

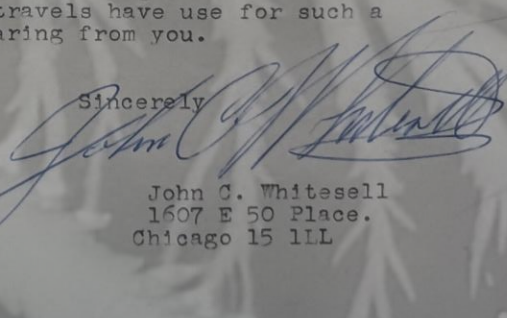
Well that was OLD NICK day after day.

I have a resume of his record that he gave me that I would not trust to the mail. But would be pleased to meet you anytime in chicago and reveal what I have and if there is a Tesla Museum someplace perhaps I could make arrangements to give up the Speed indicator that he used in all of his Alternating Current developements.

I am taking the liberty of disclosing myself in the form of a brochure that I am having faith in to help me get located even in the fall of life so if you in your travels have use for such a man as myself I would appreciate hearing from you.

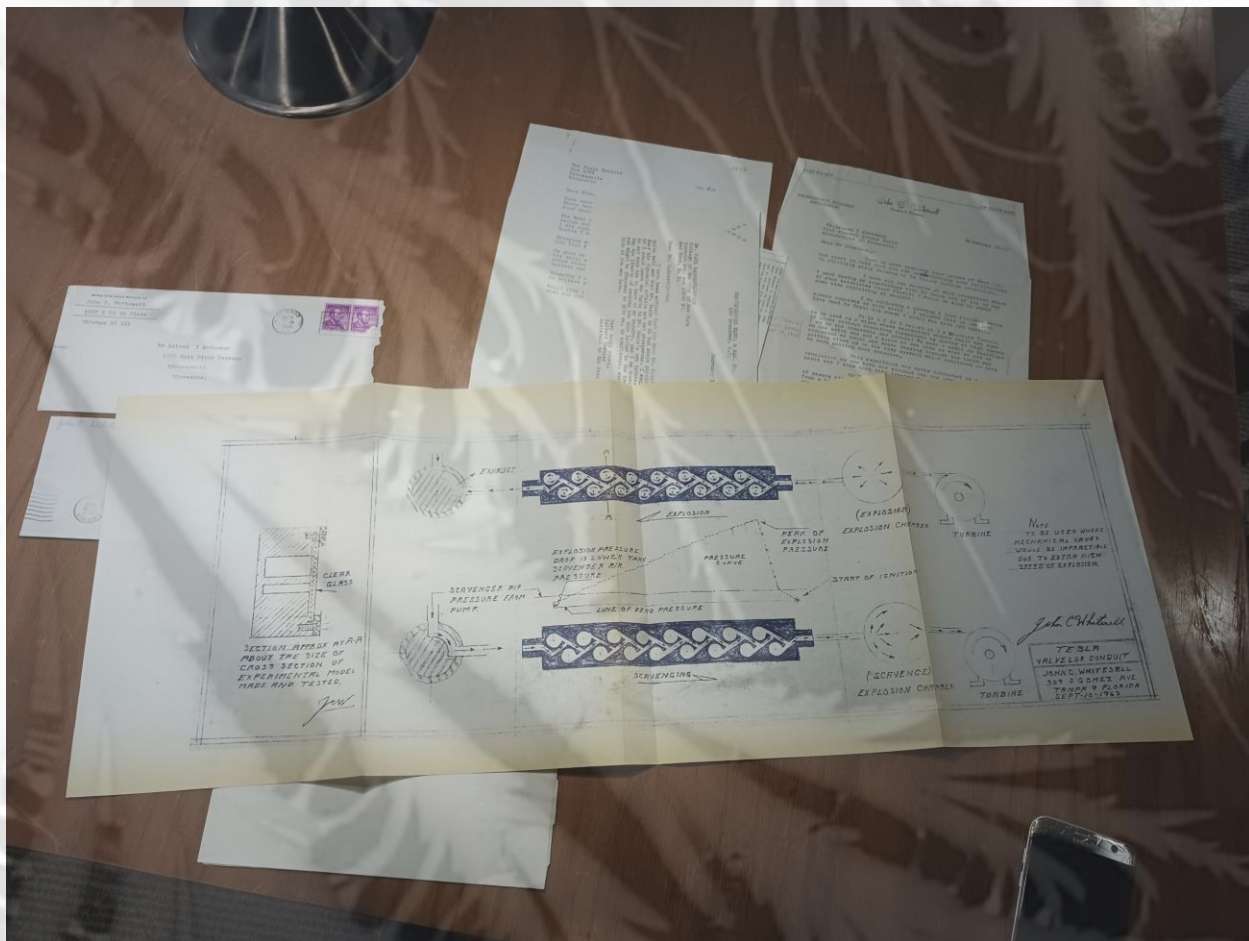
Your letter was written by such a professional, so please excuse my typing.

Sincerely

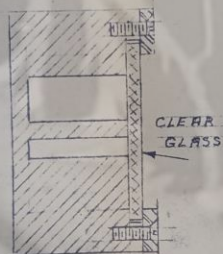


John C. Whitesell  
1607 E 50 Place.  
Chicago 15 1LL



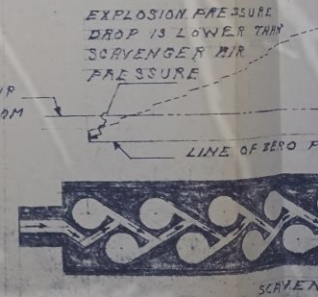
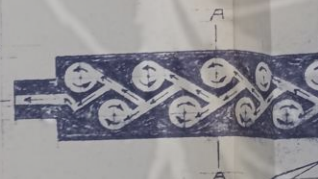
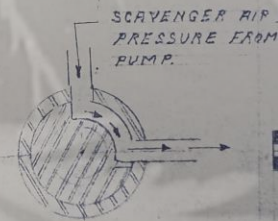
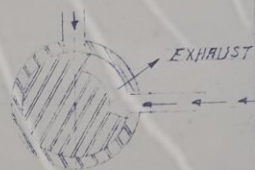




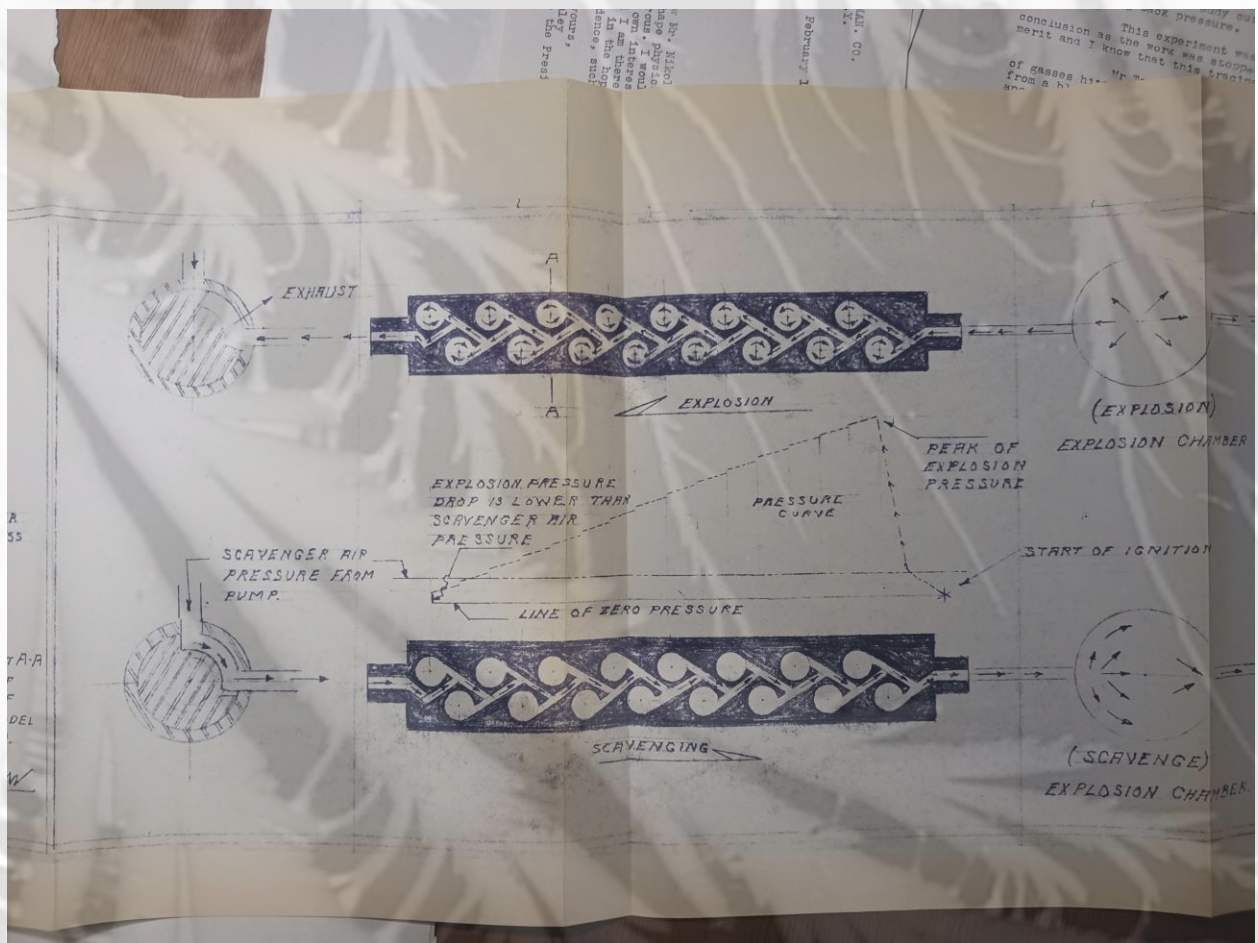


SECTION APPROX AT A-A  
ABOUT THE SIZE OF  
CROSS SECTION OF  
EXPERIMENTAL MODEL  
MADE AND TESTED.

*Jew*









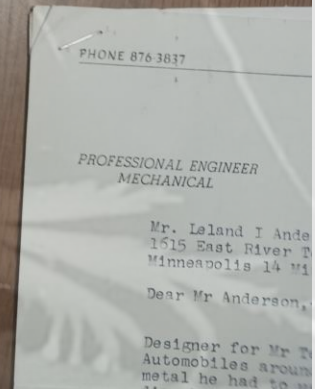
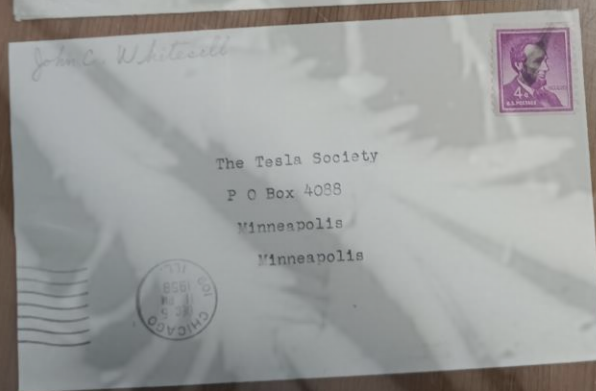
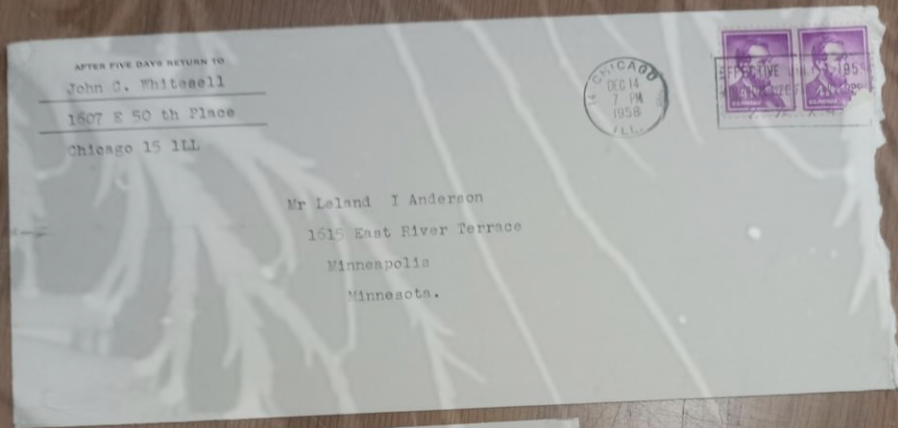


NOTE  
TO BE USED WHERE  
MECHANICAL WAVES  
WOULD BE IMPRACTICABLE  
DUE TO EXTRA HIGH  
SPEED OF EXPLOSION.

John C Whitwell

TESLA  
VALVE LOR CONDUIT  
JOHN C. WHITESELL  
309 S GOMEZ AVE  
TAMPA 9 FLORIDA  
SEPT-10-1963







PHONE 876-3837

JULY 29, 1963

309 SOUTH GOMEZ

*John C. Whitesell*  
TAMPA 9, FLORIDA

PROFESSIONAL ENGINEER  
MECHANICAL

Mr. Leland I Anderson  
1615 East River Terrace  
Minneapolis 14 Minnesota.

Dear Mr Anderson,-

As I have advised , I was the only Engineer, Designer for Mr Tesla when he was designing A gas Turbine for Automobiles around 1925, Incidentally as I look back the only metal he had to use was Monell and the 10" rotor grew 1/16" in diameter at 30,000 revolutions per minute. Should Tesla had metals then as are available to take over 3,000 degrees the Turbine would have been a sucess as the principles are the same.

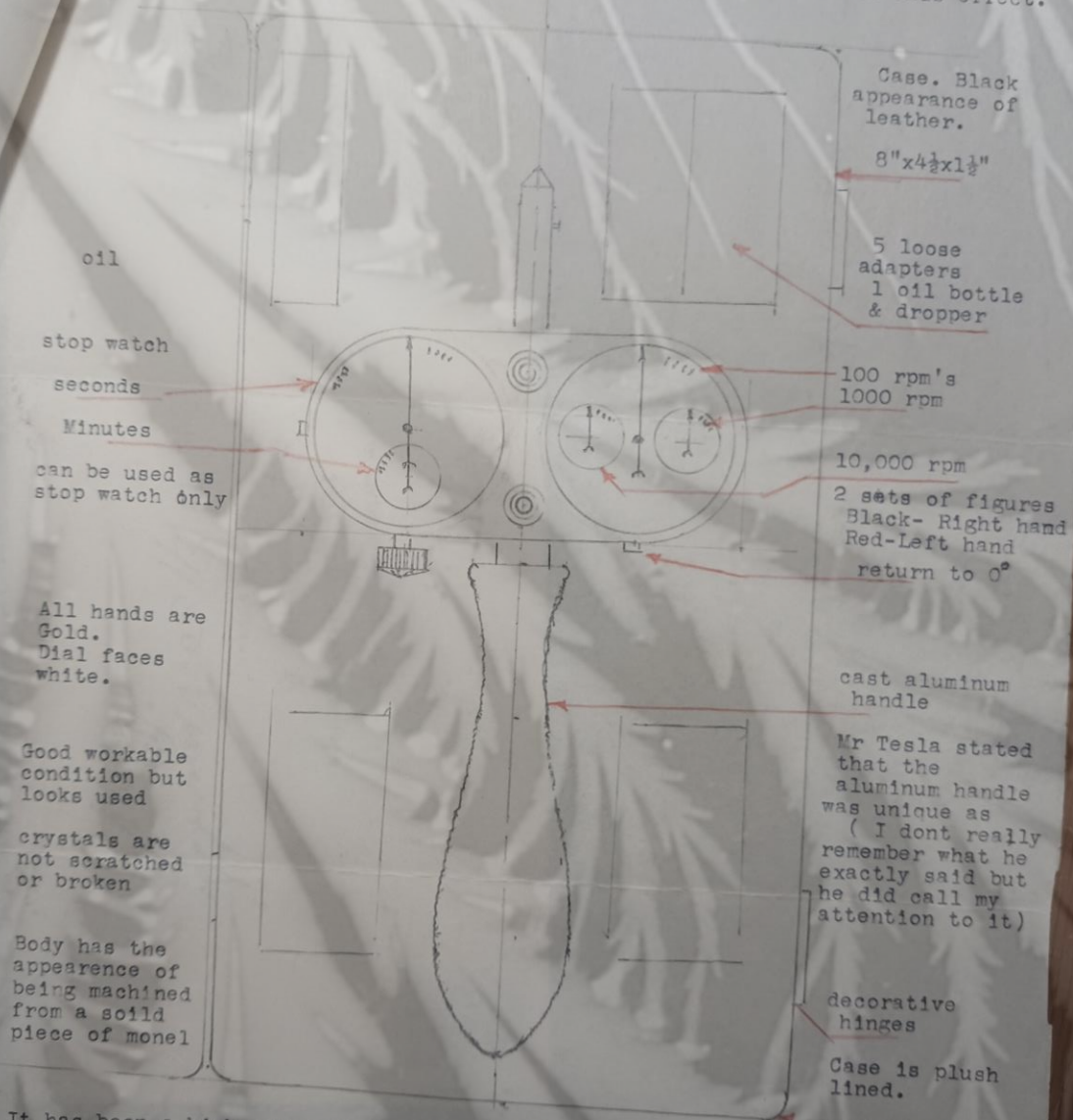
I have had a serious accident and was in the hospital from the result. Then I went practically blind and had to have cataracts removed from both eyes, therefore it is hard to make some kind of a living and have to dispose of a few of my most prize possessions . Therefore I have enclosed a sketch of the Tesla Speed Indicator which I have for sale and am asking \$75.00 for it , It is in good shape to use as an Indicator .

I will go to a Notary and swear to its authenticity  
If you are interested I would appreciate  
hearing from you.

*John C. Whitesell*  
John C. Whitesell



Speed Indicator of Mr Nikola Tesla used by him during the developement of the Alternating Current Motor ( He advised the writer to this effect.



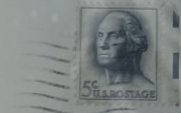
It has been a high price instrument

( Full Size)

*John C. Whitesell*  
 Aug. 28-63  
 John C. Whitesell  
 309 S Gomez Ave  
 Tampa Florida.



John C. Whitesell  
309 S Gomez Ave.  
Tampa 9 Florida  
33609



Mr Leland I Anderson  
1615 East River Terrace.  
Minneapolis 14  
Minnesota.

4150-Vincent St  
(10)  
1448

JUL 28, 1963



C O C  
O P O  
P  
Y

WESTINGHOUSE ELEC. & MAN. CO.  
150 Broadway, N.Y.

February 1, 1926

Dr. PAUL RADOSAVLJEVICH  
College of the City of New York  
Convent Ave. and 139th St.  
New York, N. Y.

Dear Dr. Radosavljevich

I have been advised that you know Mr. Nikola Tesla quite well and that Mr. Tesla is in bad shape physically also that his financial affairs are not prosperous. I would be glad if I could learn the facts in Mr. Tesla's own interests but do not wish him to know of my inquiry, and I am therefore taking the liberty of sending you this letter in the hope that you might be disposed to give me, in confidence, such information as you may have.

Very truly yours,  
Calvert Townley  
Assistant to the President



1958

The Tesla Society  
Box 4088  
Minneapolis  
Minnesota

Dec. 5th

Dear Sirs.

Have recently been advised by Mr George Scullin of  
Stony Brook, Long Island as to the existance of  
your societv.

The Budd Co of Philadelphia retained Mr Tesla to  
design and build a Gas Turbine for automobiles and  
I was appointed his only designer. I worked for him  
during I believe 1923 until 26.

Everyday was a new experience, few men got to know  
him like I did.

He gave me his Speed indicator that he used during  
his early engineering of the alternating current  
motor along with some write ups of him that I dont  
believe are any duplicate copies.

Everyday I wrote down what transpired and it is hard  
to believe some of the things wñthout being there.

Would like to talk it over with one of you sometime  
when you are in chicago.

Sincerely

*John C. Whitesell*  
John C. Whitesell  
1607 E 50th Place  
Chicago 15 1LL



*John C. Whitesell*  
TAMPA 9, FLORIDA

PROFESSIONAL ENGINEER  
MECHANICAL

September 10.63

Mr. Leland I Anderson  
4150 Vincent Avenue South  
Minneapolis 10 Minnesota.

Dear Mr Anderson,-

Glad to have received your letter of Sept 7th.  
but sorry to hear that you are encountering some difficulties  
in obtaining early records of Mr Tesla's turbine activities.

I have all the records of what transpired which  
I kept during my experiences with Mr Tesla and if you or any  
of your associates visit Florida I would be glad to spend  
some time explaining my records.

I am enclosing a drawing I just finished which  
always appeared to have merit. I believe this is the last  
idea that Mr Tesla had where a model was made and tested.

It is a ( Or I called it ) a Valveless Conduit  
to be used as a valve where mechanical valves could not open  
or close without hammering themselves to powder at high speeds  
( up in the thousands per minute ) We made a model as described  
on the print and had a glass on one side so when we had an  
explosion we could see smoke passing through the track and  
getting mixed up in the eddy current which convinced us that  
we were getting back pressure.

See ORAL ID  
PRINT DATED  
SEPT. 10, 1963

This experiment was never conducted to a  
conclusion as the work was stopped out the idea to me had some  
merit and I know that this tracing is the only record.

Mr Tesla was not only interested in a not blast  
of gasses hitting the Turbine wheel like the expanding gasses  
from a blow torch, but he also wanted to get a real explosion  
and the gasses hitting the turbine wheel and having fresh air  
entering the explosion chamber to scavenge the burned gasses and  
have a more economical product. He always talked of traveling  
from coast to coast on a tank full of gasoline.

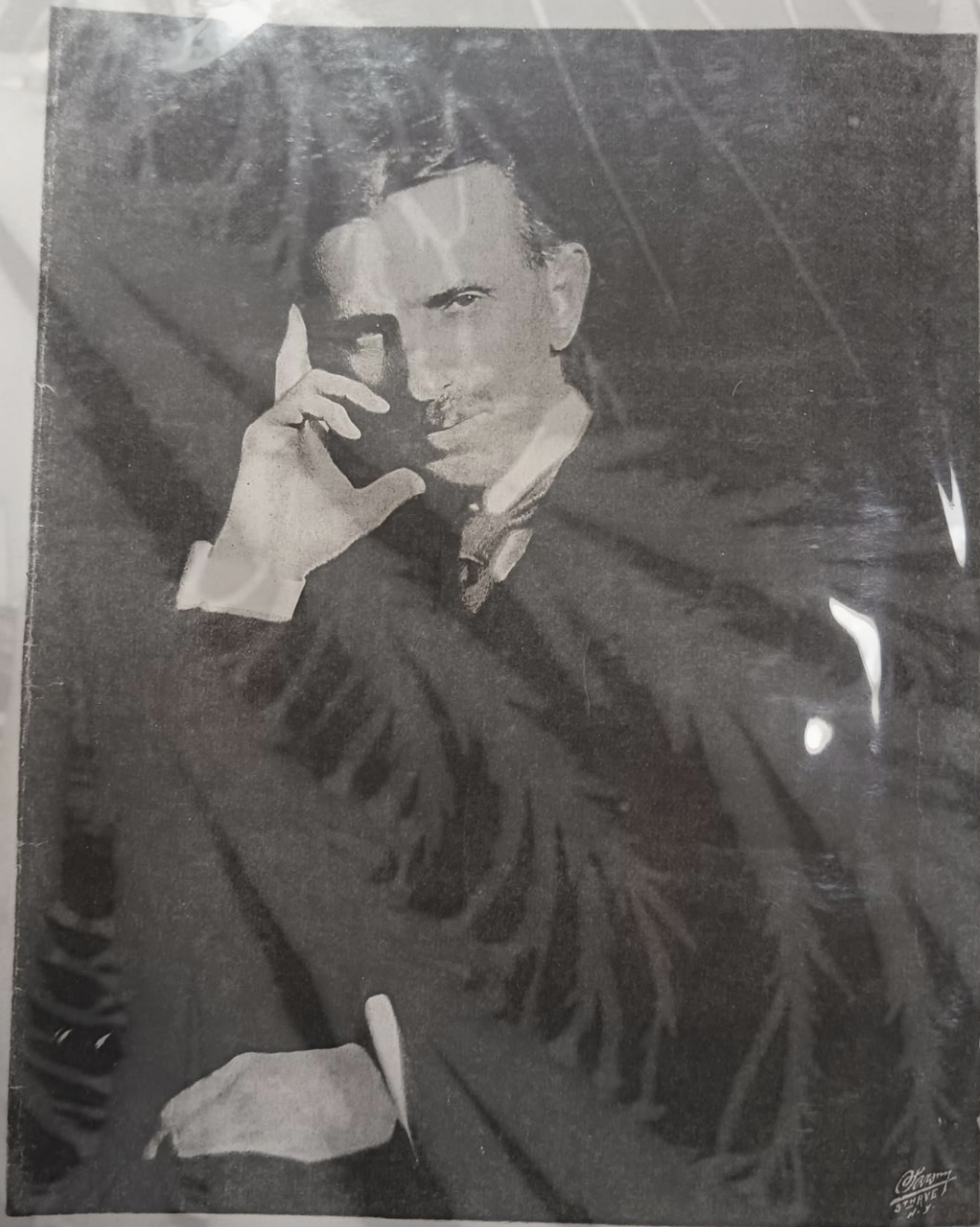
PS. If you make prints from the tracing  
will you please return the tracing to me.

Thanks

Sincerely

*John C. Whitesell*  
J.C. Whitesell.





Apr. 25 1921.

Compliments from Nikola Tesla



W. E. Townsend, District Judge (in a decision upholding some fundamental Tesla Patents): "It remained to the genius of Tesla to capture the unruly, unrestrained and hitherto opposing elements in the field of nature and art and to harness them to draw the machines of man. It was he who first showed how to transform the toy of Arago into an engine of power, the laboratory experiment of Bailey into a practical successful motor, the indicator into a driver. He first conceived the idea that the very impediments of reversal in direction, the contradictions of alternating rotation - a whirling field of force. What others looked upon as invincible barriers, impassable currents and contradictory forces, he brought under control and harnessing their directions taught him to utilize in practical motors. In his activities, the power of Niagara."

engine

12

dent, American Institute of Electrical Engineers: "As a matter of history it is a Tesla principle and the Tesla system which have been the directing factors in modern electrical engineering practice."

B. A. of Engineer and Author: "The genius of Tesla has been instrumental in stimulating, if not in creating a wonderful industry, wonderful in magnitude and wonderful in the ingenuity of the apparatus used." -- "Not since the appearance of Faraday's Researches in Electricity has a great experimental truth been voiced so simply and so clearly as the description of Mr. Tesla's great discovery of the generation and utilization of polyphase alternating currents. He left nothing to be done for those who followed him. His paper contained the skeleton even of the mathematical theory. -- Were we to seize

old world

JUN 19 1920



W. E. Townsend, District Judge (in a decision upholding some fundamental Tesla Patents): "It remained to the genius of Tesla to capture the unruly, unrestrained and hitherto opposing elements in the field of nature and art and to harness them to draw the machines of man. It was he who first showed how to transform the toy of Arago into an engine of power, the laboratory experiment of Bailey into a practical successful motor, the indicator into a driver. He first conceived the idea that the very impediments of reversal in direction, the contradictions of alternating rotation - a whirling field of force. What others looked upon as invincible barriers, impassable currents and contradictory forces, he brought under control and by harmonizing their directions taught how to utilize in practical motors, in distant cities, the power of Niagara."

G. F. Scott, President, American Institute of Electrical Engineers: "As a matter of history it is the Tesla principle and the Tesla system which have been the directing factors in modern electrical engineering practice."

B. A. Behrend, Chief Engineer and Author: "The genius of Tesla has been instrumental in stimulating, if not in creating a wonderful industry, wonderful in magnitude and wonderful in the ingenuity of the apparatus used." -- "Not since the appearance of Faraday's Researches in Electricity has a great experimental truth been voiced so simply and so clearly as the description of Mr. Tesla's great discovery of the generation and utilization of polyphase alternating currents. He left nothing to be done for those who followed him. His paper contained the skeleton even of the mathematical theory. -- Were we to seize

JUN 19 1926



and to eliminate from our industrial world the results of Mr. Tesla's work, the wheels of industry would cease to turn, our electric cars and trains would stop, our towns would be dark, our mills would be dead and idle. Yes, so far-reaching is this work, that it has become the warp and woof of industry. -- His name marks an epoch in the advance of electrical science. From THAT work has sprung a revolution in the electrical art."

Lord Kelvin (before the British Association commenting upon a Tesla Transformer exhibited): "This is a wonderful development of the induction coil and destined to be of great importance."

Sir William Crookes: "The performance of the machine is marvelous."

"Nature" London: Dr. Silvanus Thompson exhibited a Tesla Oscillator. He congratulated Mr. Tesla on the perfect working and the compactness of his machine."

"Electrical Review" New York: "Mr. Tesla comes forward with perfected and extremely simple oscillators. We believe that the importance of the advent of these new implements for the advancement of science and industry can not be overestimated."

A. E. Kennelly, Electrical Engineer, Author, Professor at Harvard University (at the occasion of the award of the Edison Medal): "The medallist is the man who devised the rotating magnetic field -- that set wheels going 'round all over the land and all over the world -- and also made the phenomena of high frequency known -- and what he showed was a revelation to science and art unto all time."

H. W. Buck, Chief Engineer, President of the American Institute of Electrical Engineers: "The work of Nikola Tesla at that time in his great conception of the rotary field seems to me one of the greatest feats of imagin-



ation which has ever been attained by human mind. From his work followed the great work of Roentgen, who discovered the Roentgen Rays, and all that work which has been carried on throughout the world in following years by J. J. Thompson and others which has really led to the conception of modern physics. His work antedated that of Marconi and formed the basis of wireless telegraphy, which is one of the most scientific applications, and so on throughout all branches of science and engineering of the present day."

John Stone Stone, wireless expert, author, in reviewing the work of Lodge, Marconi, Thomson and others: "Among all those, the name of Nikola Tesla stands out most prominently. Tesla with his almost preternatural insight into alternating current phenomena that has enabled him some years before to revolutionize the art of electric power transmission through the invention of the rotary field motor, knew how to make resonance serve, not merely the role of a microscope, to make visible the electric oscillations, as Hertz had done, but he made it serve the role of a stereopticon -- He did more to excite interest and create an intelligent understanding of these phenomena -- than any one else -- and it has been difficult to make any but unimportant improvements in the art of radio-telegraphy without traveling, part of the way at least, along a trail blazed by this pioneer who, though eminently ingenious, practical and successful in the apparatus he devised and constructed, was so far ahead of his time that the best of us then mistook him for a dreamer."

Privy Counsellor Prof. A. Slaby, leading German authority in a letter to Tesla: "I am devoting myself since some time to investigations in wireless telegraphy, which you have first founded in such a clear and precise manner. It will interest you as father of this telegraphy to know, etc."

JUN 19 1926



Electrical Review (commenting upon the wireless): Mr. Tesla's researches in this field have attracted world-wide attention and his is undoubtedly the master mind."

M. E. Girardeau, Leading French expert and author: "On the end of September, 1897, Nikola Tesla, the famous American engineer, applied for patent protection on a system of transmission of electrical energy without wires (patent No. 645,576).... This is the same engineer who was developing wireless telegraphy in 1893, three years before anybody else .....Indeed, one finds in the American patent extraordinary clearness and precision, surprising even to physicists of today, when considering that Tesla spoke of phenomena in regard to which we obtained true information only several years later, so that in 1897 nobody understood him and he appeared to many other physicists like a visionary. Later, when it was recognized that the application of resonance to wireless telegraphy was a capital invention, a number of detractors became infuriated against the work of Tesla -- It is Tesla who is the true inventor of wireless telegraphy .... and it is certain that none will dare to detract from his merit by the objection that he has left to others the trouble of profiting from financial results of enterprises based on his invention ..... What cruel injustice would it now be to try to stifle the pure glory of Tesla in opposing him scornfully with the present reputation of those who had the chance to be understood by the financiers.."

Dr. L. W. Austin, Leading Government Expert of the United States (referring to Mr. Tesla's work):  
"I consider him the Father of Wireless.... His lectures in the early nineties contain full description of a wireless system superior to anything which we actually had in practice before 1910."

"Der Electro-technische Anzeiger" Berlin, and "Elektricität" Leipzig (commenting upon Tesla's work) "It



is a combination of the greatest power of technical performance with the most vivid imagination, such as has never before manifested itself in the human mind."

"Electrical Review" (editorial commenting upon Tesla's Telautomotive Art): "We believe that the beauty and importance of the invention Tesla has just announced, in its ultimate development, will be such as to place it among the most potent factors in the advance and civilization of mankind."

C. B. Richards, Professor Emeritus of Mechanics, Yale University: "I am amazed at the development of Power by the Tesla turbine and stunned by the exhibit."

F. Sargent, Chief Engineer and Turbine Expert: "I am im-

pressed with the newness and novelty of the underlying principle of this invention. It is such as will claim the attention and admiration of anyone of a scientific turn of mind in a mechanical direction."

Reynold Janney, Chief Engineer, Universal Transmission Co: "It is a great invention."

Brigadier Allen of the War Department: "Something new in the world. Officers are greatly impressed with it."

Miller Reese Hutchinson, Chief Engineer: "It is the greatest invention of the age."

Arnold Irinyi, Chief Engineer, Oelfenener-Gesellschaft, Germany: "It is the ideal gas turbine."

"The Motor World": "The new principle unquestionably is a great contribution to science and engineering, great in its simplicity and breadth of application."

B. B. F. Collins (Power Plant Economist): "It is a wonderful turbine."

"Scientific American": "Considered from the mechanical standpoint, the turbine is astonishingly simple and economical in construction, should prove to possess such a durability and freedom from



"The turbine is different in principle of  
any heretofore in use and one which will  
take less room and less coal than the best  
engine now running"....."Turbine of re-  
volutionary design"....."Improvement in  
dynamics which promises revolutionary re-  
sults"....."Results seem revolutionary to  
the point of staggering the imagination"..  
"The motor will revolutionize the turbine  
industry"....."Wonderful motor. Extraord-  
inary mechanical principle".....etc. etc.

From Numerous Articles and Comments:

"Engineering Magazine": "An entirely new form of prime  
mover with interesting possibilities."  
"Technological World Magazine": "The Tesla Turbine is the  
apothecize of simplicity. It is so violent-  
ly opposed to all precedent that it seems  
unbelievable."  
"From Numerous Articles and Comments":



My dear Mr. Scheraga,

January 17, 1934

The most important discovery in the  
field has been the discovery of a new principle of  
the conservation of energy in the case of  
a system of particles.

1) The velocity of a particle entering a region  
of a field is equal to the velocity of the  
particle in the region of the field from infinity  
and is equal to the velocity of the particle in  
the region of the field.

2) The kinetic energy of a particle in the region of  
a field is equal to the kinetic energy of the  
particle in the region of the field and is equal  
to half of that required to carry the  
particle from the region of the field  
of the second.

Note: The force may differ in sign and  
some corrections should be made.

The second shows that the conservation of energy  
is not absolute.

Please preserve this for possible reference.

Sincerely

W. K. R.



*Private*



Hotel Pennsylvania N.Y.  
February 28. 1930.

My very dear Luke:

I got the inclosed draft with the intention of forwarding it to you when I learned that you had just left for Atlantic City. But you told me over the phone not to do it. Here it is with thousand thanks for your kindness.

My affairs are as before. Good prospects  
small realizations.

An article in the magazine I am sending (defective as usual) may give you a few moments diversion.

Hoping that all is well with you  
I remain as ever

Yours sincerely

Dr. R. W. Johnson  
26 East 55 Street  
New York

Vikola



\* Indorsement for  
Robt. Underwood Johnson



Hotel Pennsylvania N.Y.

January 31, 1930.

My dear Luke:

This is to acknowledge receipt of Two  
Thousand Dollars (\$200) which I promise to  
refund within three weeks.

My former private Secretary, now Auditor  
of the Union Sulphur Co., George Scherff, is  
familiar with all my affairs and in the position  
to make the best of my interests and protect  
you should anything happen to me. He is a  
man of very rare intelligence and business ability,  
a devoted friend and a perfect gentleman.

But you are my best friend and I hope that  
I shall soon have an opportunity to show you  
how much I have appreciated your many kindnesses.

R. U. Johnson Esq.  
327 Lexington Ave. N.Y.

As ever yours sincerely

H. Teale





HOTEL PENNSYLVANIA  
NEW YORK

July 21. 1930.

My very dear Duke:

Sorry I could not reach you  
Saturday. May the Lord reward you  
for your Samaritan deeds with a long  
and happy life - longer than that  
of Lore Age! \*

Sincerely yours

Nikola

Enclosure

\*  
Zora Alpha  
the 156 year old  
Turtle





Hotel Pennsylvania N.Y.  
October 1, 1930.

My very dear friend Luke:

Thank Heaven I can just manage  
to forward the enclosed. May you  
be the recipient of all the blessings  
you deserve. I am so grateful to  
you that I forgive you calling  
Fock a grinned warrior!  
With admiration for your <sup>otherwise</sup> marvellous  
ode I am as ever  
Yours Nikola

Dr. R. L. Johnson Esq.  
7 West 43 Street  
N. Y.



the subject you wish to write  
about. In order to explain this  
phenomenon Einstein has  
invented the quantum "humble".

My theory of gravitation  
explains this phenomenon  
perfectly.

N.T. April 11, 1932

We need a great deal about the  
conversion of matter being  
changed into force and force  
being changed into matter  
by the cosmic rays. This is  
absurd. It is the same as  
saying that the body can be  
changed into the mind and the  
mind into the body. We know  
that the mind is a function  
of the body, and in the same  
manner force is a function of  
matter. Without a body there  
can be no mind, without matter  
there can be no force.

Einstein has for years developed  
formulas explaining the mechanism  
of the cosmos. In doing this he  
overlooked an important factor,  
namely the fact, namely that some  
of the cosmic rays are increasing  
in distance from the sun. This  
is the same as saying that the  
business letter are forgotten.

COLUMBIA UNIVERSITY LIBRARIES  
Special Collections  
Spec. 40.60.11 Teala

Teala, Illinois  
April 15, 1932  
Teala (with first 11.3.32) 2 p. (Statement of  
Einstein relating to force, matter, to  
theory of gravitation)

THIS IS A PHOTOCOPY OF ORIGINAL MATERIALS  
IN THE COLUMBIA UNIVERSITY LIBRARIES.

This photo copy must be returned to the Rare Book  
and Manuscript Library (GB) Butler Library at the  
completion of the reader's use.



the subject you wish to write  
about. In order to explain this  
phenomenon Einstein has  
invented the quantity "lambda".

My theory of gravitation  
explains this phenomenon  
perfectly.

N.Y. April 18, 1932

We need a great deal about the  
cosmic rays matter being  
changed into force and force  
being changed into matter  
by the cosmic rays. This is  
absurd. It is the same as  
saying that the body can be  
changed into the mind, and the  
mind into the body. We know  
that the mind is a functioning  
of the body, and in the same  
manner force is a function of  
matter. Without a body there  
can be no mind, without matter  
there can be no force.

Einstein has for years developed  
formulas explaining the mechanism  
of the cosmos. In doing this he  
overlooked an important factor,  
namely the fact, namely that some  
of the heavenly bodies are increasing  
in distance from the sun. This  
is the same as writing for the  
business letter and forgetting

COLUMBIA UNIVERSITY LIBRARIES  
Special Collections  
Spec. 75.1011  
Teale

Teale, Nikola  
M.P., 15 Apr 1932  
a.m. (with initials), 2 p. (Statement of  
Nikola's theory of force and matter, to  
Teale's theory of gravitation)

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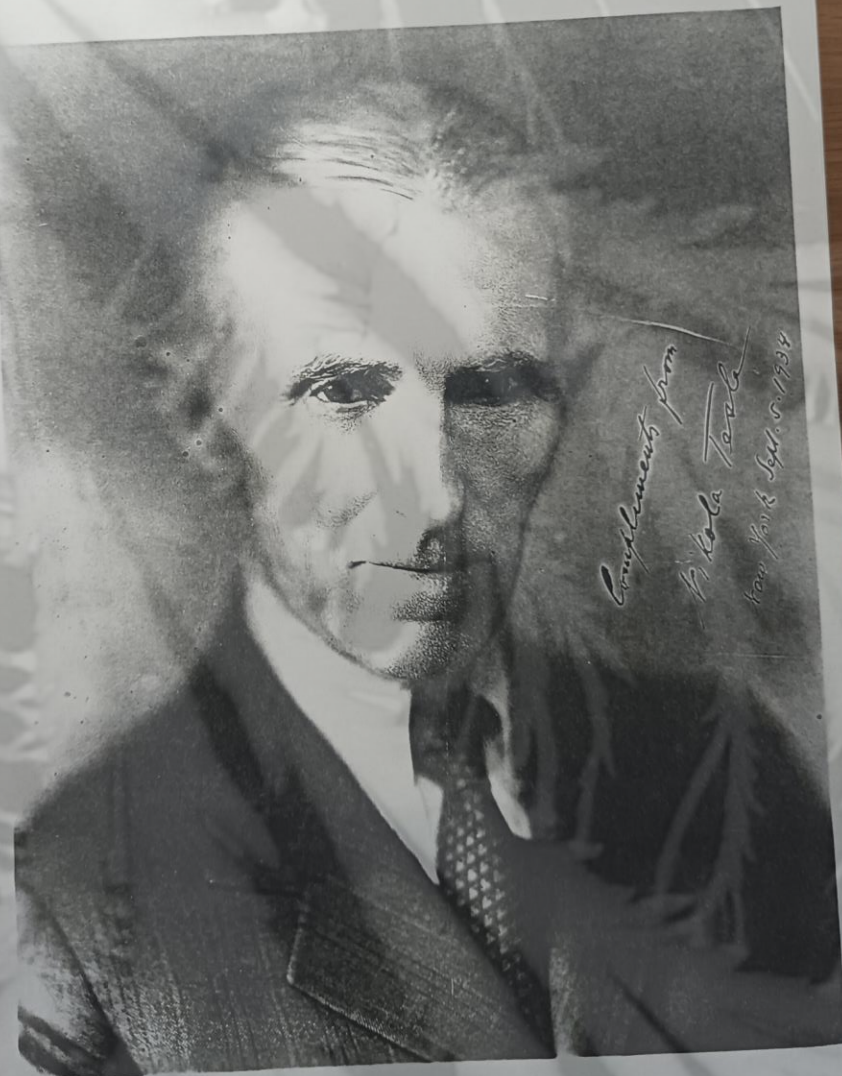
Tesla Nikola Jr.

1934

Physician

gib. 10. VII, 1856 Smiljan Croatia

+ I. 1943 New York

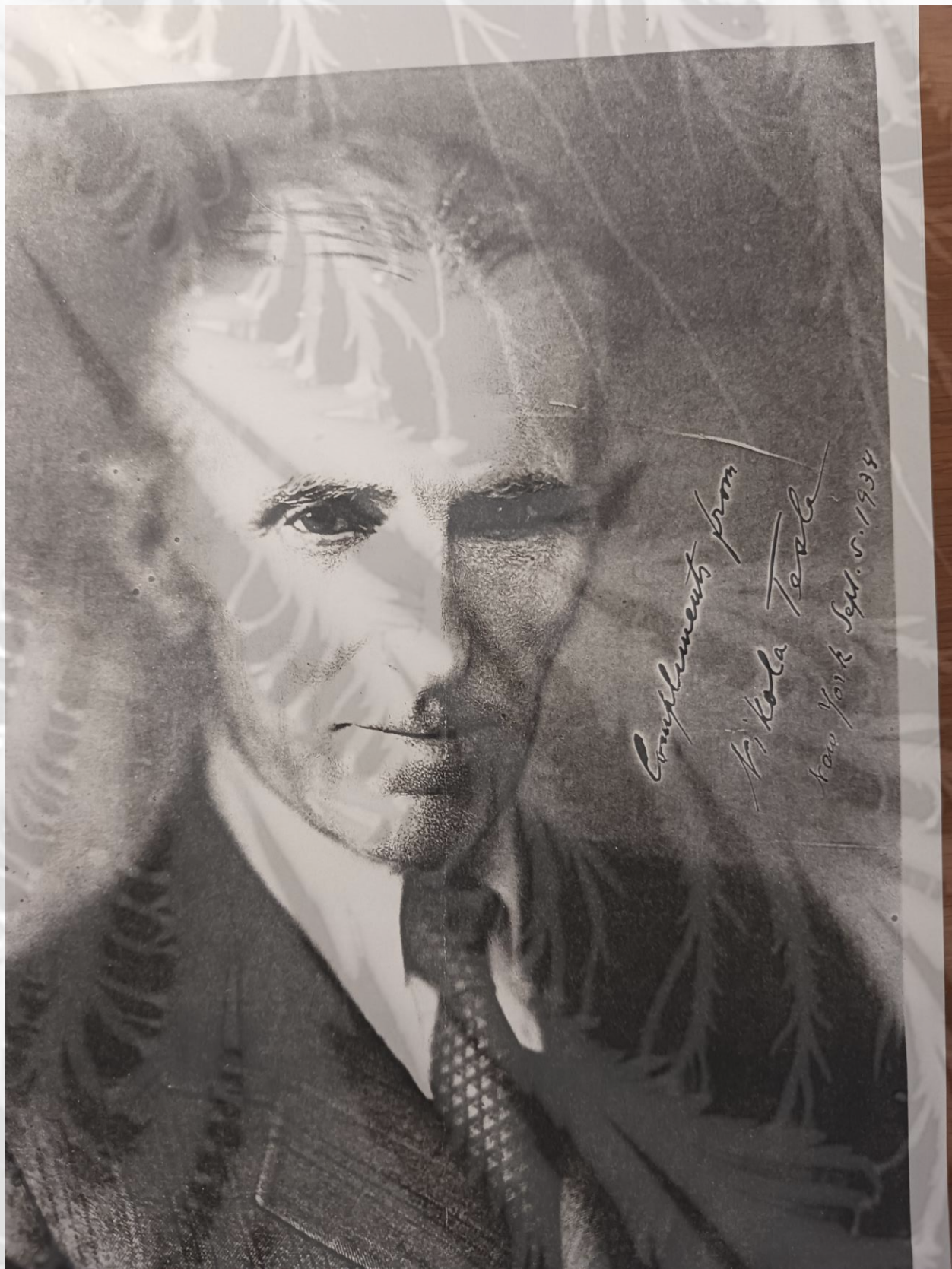


Compliments from

Nikola Tesla

New York Sept. 5, 1934





Compliments from  
N. Kola Tola  
New York Sept. 5. 1934





Hotel New Yorker  
New York September 16. 1934.

G. S. Viereck Esq.  
627 West 113<sup>th</sup> Street  
New York.

Dear Mr. Viereck:

Your letters of the 11<sup>th</sup> and  
15<sup>th</sup> inst. with draft of inter-  
view have reached me but I  
had to concentrate all my  
energies on an important





**HOTEL NEW YORKER**  
34th STREET & EIGHTH AVENUE - NEW YORK CITY





*Hotel New Yorker*

34TH STREET AT EIGHTH AVENUE  
NEW YORK



task and was unable to  
answer promptly

You are a very able writer  
but you did not get suffi-  
cient information and some  
slight changes will be necessary  
to make the statement more cre-  
ditable to both of us and the  
magazine. Perhaps the few  
glimpses of my work, as reflected  
in the enclosed articles and



comment, will be helpful to  
this end.

I shall be very glad, indeed, to  
avail myself of your kind in-  
vitation some other time but  
now I can only suggest a meeting  
at this hotel to morrow (Monday)  
in the afternoon at your con-  
venience.

With best regards

Sincerely yours

H. Teale



3/19/88

ADAM STRYKER (202)

332-4271

PHILIP FITZHUGH STRYKER  
4004 BEECHER STREET, N. W.  
WASHINGTON 7, D. C.

ORIGINAL LETTERS, DOCUMENTS & MANUSCRIPTS  
OF HISTORICAL AND LITERARY INTEREST

FEDERAL 8-2164

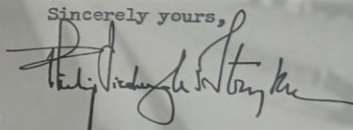
January 3, 1963

Dear Mr. Anderson:

Your splendid article on the papers of Nikola Tesla came to my mind this afternoon when, in going through a collection of minor autograph material, I discovered a little note of George Sylvester Viereck. It is so very minor that I'm almost embarrassed to send it to you, but you might find it of some interest.

Best wishes for the New Year.

Sincerely yours,



Mr. Leland I. Anderson  
1615 East River Terrace  
Minneapolis 14, Minnesota

Enclosure.

L.S. 4to G.S. Viereck  
October 3, 1934, to Arthur Lengel of  
the Liberty Magazine.



now:

January 19, 1963

Philip Fitzhugh Stryker  
4004 Beecher Street, N.W.  
Washington 7, D. C.

Dear Mr. Stryker:

Thank you very much for the L.S. of George Sylvester Viereck which mentions Tesla and which you were most thoughtful in sending to me. Thanks, too, for your kind words about my short piece in Manuscripts. Tesla was indeed one of those dedicated savants of whom the lay public knows comparatively little.

Very truly yours,



TELEPHONE  
CATHEDRAL 8-7560

**GEORGE SYLVESTER VIERECK**  
627 WEST 113<sup>TH</sup> STREET, NEW YORK

CABLE ADDRESS  
VIERECK N. Y.

October 3, 1934

*note by*

Dear Lengel:

The Tesla article has gone through. I am now working on another interview with Tesla for P.C. Thanks for the suggestion.

My vitality is slowly returning and I am all ready for anything that may turn up.

Faithfully yours,

GSV:RML

*G S Viereck*

Mr. Arthur Lengel  
Liberty Magazine  
1926 Broadway  
New York, N.Y.

Wm. C. Lengel was Associate Editor of Liberty. Tesla's article "A Machine to End War" as told to Viereck appeared in the February 9, 1935, issue.

The article by Viereck (Under the pen name George F. Corners) entitled "Nikola Tesla's Youth and Strength at 78" appeared in the March, 1935, issue of Physical Culture.





Hotel New Yorker

New York October 3, 1934.

F. S. Viereck Esq.

627 West 113 Street

New York.

My dear Mr. Viereck:

Thanks for your fav. of yesterday  
with enclosures which I shall be much  
pleased to use.

The Liberty people only show  
good discernment. Any magazine  
editor should be glad to get an



article from a man of your literary attainments and worldly experience.

I appreciate R. Macfadden more than I have expressed in my letter to you.

As I told you briefly my whole theory of diet is linked to the rotation of the earth and attendant periodic changes of conditions and I shall gladly embrace the opportunity to have it clearly explained to the readers in your forceful style.

We can get together early in the coming week for a discussion of the subject.

Sincerely yours

N. Teale





Hotel New Yorker  
November 4. 1934.

J. S. Viereck Esq.  
627 West 113 Street  
New York.

My dear Mr. Viereck:

Your poems have almost  
stunned me, otherwise I would  
have thanked you before this for  
the book.

You are a poet of the first



order pertaining of the genius of Goethe, to a  
Heim, Bürger, Byron, Poe and other words  
classics - a combination productive of portra  
wonderful results. Your range is from with t  
a delicate touch to the destruction were  
blow of a sledge hammer and you express  
can project yourself through time and he lo  
space as no other. is tem  
all as

"I hunted thee were the Isis rods, all as  
From the Brocken's crag to the Upper ~~Ther~~" -- Wh

Be it due to the fascination of misle  
mythical figures of beauty and power or status



of Goethe, to a rare quality you possess, your  
words are like a magic carpet trans-  
ferring the reader to distant places  
with the speed of thought.

Were it not for your masterful  
expression, some of your poems would  
be horrible. But in your case one  
is tempted to say: "do it again and  
all will be forgiven!"

What is it that prompts you to  
mislead the world in regard to your  
status in an unspeakable sphere



of human activity? You are a  
sinner but only in your conceptions.  
Your loves and misdeeds are wholly  
imaginary. You were never a Tom  
Tuen but rather a tailless rooster  
preening himself.

Sincerely yours

N. Tesla

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Hotel New Yorker  
New York Nov. 11. 1934.

F. S. Viereck Esq.  
627 West 113 Street N.Y.

My dear Viereck:

Referring to your letter of the 5<sup>th</sup>  
inst. I read your beautiful poem "The  
Parrot" before and had proposed myself  
to have a few words with you in regard  
to your views on matter and individual  
immortality.

Matter can not be destroyed, nor can it  
be created. But this statement must be qualified.



so, force is the result of the motion of matter. If all motion were to stop, gross matter would disappear.

You have dwelt on the question of individual immortality. Years ago when I was even more ignorant than now I proposed to ascertain the truth by experiment. The idea was to take a chemical combination of atoms A and B, separate these constituents and then put them in the presence of an atom C from another source but otherwise the same as B. Now, if it be found that A will invariably combine with B, immortality of any

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62  
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When Chaos "the terrific mother" begot from  
"dark eternity" an universe of form and order,  
there was no change in the quantity of matter  
provided that this term also includes the ether.  
Heretofore its meaning in philosophical works was  
restricted to things perceptible and the above  
time honored scientific dictum is false, for  
gross matter is ever changing in amount being  
continuously produced from ether and again  
dissolved into the same. In the last ana-  
lysis the entire universe consists of ether  
which can not be created or destroyed and,  
consequently, remains eternally constant in  
quantity. I have made a discovery of  
inestimable importance in this connection.



and verified it in striking experiments. One of its many consequences is mentioned in the marked paragraph of enclosed article.

Lord Kelvin was emphatic in his utterances that the ether exists but the Relativists have discredited this active medium indispensable to the Newtonian interpretation of the Cosmos. They have even strayed so far from rational concepts as to believe in the interchangeability of matter and force. This is the roughest nonsense, of course. It is like saying that the body can be transformed into the soul or vice versa. The soul, spirit or mind are but expressions of the functioning of the body and cease in death. Exactly



will be swayed by hope and fear, but the  
time may come when individual conscious-  
ness will be completely eliminated and  
replaced by a consciousness of the whole.  
Then our tortures will be ended and  
we shall consider ourselves immortal.

If you will digest this philosophy  
of mine and resign yourself to  
complete and everlasting extinction  
your life will be longer and much  
more enjoyable.

Sincerely yours

N. Tesla





Kind of organic or inorganic body or shape is demonstrated assuming with Vietcher that the same combinations re-occur. My experimental skill was woefully inadequate to the task and I have left its carrying out to others.

The desire for continued existence, which has tormented humanity from its very beginnings, can be traced to the momentum of the elementary masses composing the human body and whirling at prodigious speeds. The urge felt is a



physical reality comparable to the sensation of weight, but individuality is an illusion. This is the hardest of all truths to grasp for it is, seemingly, contradicted by every evidence of the senses. Yet what they reveal to consciousness is nothing more than a mirage. You are not Viereck but a succession of different existences, a wavecomplex speeding through time and space to its inevitable dissolution. You have no mind, no knowledge, no memory, and there is absolutely no record of past events in your brain. You are only a wonderfully intricate



an - instrument with inconceivably sensitive  
is receptive organs unceasingly responding  
all to external stimuli and controlling all  
con - thought and action. Your fellow beings  
are mechanisms in every respect like yourself,  
is answering in the same manner to identical  
are influences and the close concordance  
different of the reactions of all begets mutual  
through understanding and reason. So the onward  
disso - march of man is accomplished, not  
knowledge, through his own initiative - for there is  
no free will - but through the irre-  
brain. sistible drive of external forces. For  
cate cons yet to come every human being



Tesla



Hotel New Yorker  
New York Nov. 13. 1934.

G. S. Viereck Esq.  
627 West 113 Street  
New York

My dear Viereck:

Replying to your kind letter of  
yesterday I shall be delighted to  
meet Mr. Viereck and your son as  
soon as circumstances permit.

Please do not waste your valuable



to me on anything like a scientific read  
discussion but use it to give us anti  
more of your wonderful poems and is a  
prose. Anything that diverts you dyne  
from your art is a loss to the cover  
world. to in

When I received your book enjoy  
"Spreading Farms of Heth" I wonder my  
how I could ever read even a f.s.  
chapter on such a subject. But Please  
out of deference to you I began yourself  
I shall  
of the  
through



entific reading and could not leave off  
until I finished. Your account  
is extraordinarily interesting and  
dynamic, full of ingenious and  
convincing arguments and exhaustive  
to an unbelievable degree. I have  
enjoyed every word of it. Accept  
my very best thanks!

Sincerely yours

P.S.

N. Tesla

But please do not trouble  
yourself about Salome.  
I shall make the acquaintance  
of the unfortunate lady  
through the publishers.



but when I retired the night, with its monstrous  
amplifications, made the suffering very acute  
until it dawned upon me that my torture  
was due to a consuming desire to see my  
mother. Thoughts of her led me to review  
my past life beginning with the earliest  
impressions of my childhood and I was  
dismayed to find that I could not recall  
clearly even her features except in one  
scene. It was a dismal night with rain  
falling in torrents. My brother, a youth  
of eighteen and intellectual giant, had died.  
My mother came to my room, took me in her  
arms and whispered, almost inaudibly: "Come  
and kiss Daniel." I pressed my mouth against  
the icecold lips of my brother knowing only





Hotel New Yorker  
New York December 17, 1934.

G. S. Viereck Esq.  
627 West 113 Street, N.Y.

Tesla

Dear Viereck:

My capacities are limited and sometimes it happens that I am baffled in my efforts to solve the problem confronting me. It then becomes a question of life and death for the urge to find a solution is so great that I can not overcome it no matter how hard I may try. Irresistibly, I am driven to extreme concentration at the peril of a blood clot or atrophy in the brain. The most



difficult part of the task is to drive out of the mind the old images which are like rocks on the water bobbing up after each immersion. But after days, weeks or months of desperate cerebration I finally succeed in filling my head chuckfull with the new subject excluding everything else and then I reach that state I am not far from the goal. My ideas are always rational and because I am an exceptionally accurate instrument of reception, in other words, a seer. But be this true or not I am always mighty glad when I get through for there can be no doubt that such a surfeit of the brain is fraught with great dangers to life. Let me tell you of one remarkable case though



drive out of this kind which may interest you as a  
like a psychologist. Years ago, after evolving my  
each system of wireless transmission of energy, I  
month's came to the conclusion that to put it on a  
succeeded sound engineering foundation, I had to un-  
ravel the electrical mysteries of the earth.  
The task seemed almost superhuman, but I had  
the boldness of ignorance to undertake it  
rational and passed several months in most intense  
concentration eventually gaining a clear  
insight when I was at the point of collapse.  
On my slow return to the normal state of  
mind I experienced an exquisitely painful  
brain longing after something undefinable. During  
the day I worked as usual and this feeling,  
though it persisted, was much less pronounced.



had become almost unbearable and every night my pillows were wet from tears. Unable to stand it longer I resolved to quit work and go home. This I did and after a multitude of experiences I found myself in Paris whither I had fled from London to escape the fuss raised about me in England. I had to get off some final proofs for one of my lectures before leaving and while doing this a messenger handed me a telegram from my uncle which read: "Your mother is dying hurry if you want to find her alive". I rushed for the train and after a three days journey over the mountains at breakneck speed I reached bruised and exhausted, my mother's bedside.



every She was in the agonies of death but the  
unable joy of seeing me worked the miracle of a  
work temporary recovery. I never left her until  
a my own condition became such that I was  
self in taken to another building in the neighborhood  
n to for a short rest. When I was alone in my  
England. bed I meditated on what might happen if  
one my mother died. Would there be a disturbance  
while in the ether? If so could I detect it? My  
a senses were acute to an incredible degree.  
your I could hear the ticking of a watch at a  
to distance of fifty feet. A fly alighting  
train on a table in the center of the room produced  
the in my ear a thud like that of a pile-  
ached driver and I could hear plainly the clatter  
side. of his feet. I was a trained scientific



observer well qualified to make an undistorted record of what I perceived. If such a transmission of affect was possible the best conditions existed for establishing the fact. Kindled of the enormous scientific importance of such a discovery I struggled desperately against sleep and, with my senses sharpened by the darkness and stillness of the night, I watched intently. Five or six hours, seeming like an eternity, passed without a sign and then I gave out falling into a sleep or swoon. When I came to an indescribably sweet music filled my ears and I saw a floating white cloud in the center of which my mother was reclining looking

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that something dreadful had happened. My mother put me again to bed and lingering a little said with tears streaming: "God gave me one at midnight and at midnight he took away the other one". This remembrance was like an oasis in the wilderness kept alive by some strange prank of the brain in the midst of oblivion. My recollections came slowly gaining in clearness and after weeks of thinking the images appeared sharply defined and in a fullness of light which astonished me. Uncovering more and more of my past life I came to review my American experiences. In the meantime my craving



mother died on Easter day just when a choir  
was singing in a church not far from me.  
But to locate the external impression which caused  
the apparition, I had much trouble until I remem-  
bered that, on my return from Europe, I passed  
through Munich and saw there, among others,  
a painting of Arnold Böcklin interpreting one  
of the seasons and showing a group of allegorical  
figures on a cloud. So wonderfully skillful was the  
artist in this creation, that the cloud seemed positively  
to float in the air as if supported by some invisible  
means. This made a deep impression on me. The practical  
lesson of all this is to beware of concentration and be  
content with mediocre achievement.

I am getting back to earth and devoting attention  
to my woefully neglected correspondence, regretting in par-  
ticular that your note of the 28<sup>th</sup> ult. was not promptly  
answered. Of course, I shall be delighted to meet Mr. Macfarlane  
whom I consider a most remarkable man if not an unique  
figure. But as to my going to Backusack or dining out  
I am afraid that I must ask him to excuse me.  
With best regards Sincerely yours V. Tesla



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at me with loving eyes the face illu-  
minated by a strange radiance unlike  
ordinary light and grouped around her  
were figures like those of seraphims.  
The apparition passed slowly across the  
room and out of my vision. In that  
instant a feeling of absolute certitude  
swept over me that my mother was dead  
and, sure enough, a maid came running  
who brought the mournful message.  
This knowledge gave me a terrific  
shock and suddenly I became aware  
that I was in New York! My mother



had died years before but I had forgotten that I  
it! How could this happen? I asked myself, responding  
horried and bitterness, pain and shame through  
overwhelmed me. My sufferings had been from the  
real though the events were but imaginary. The  
reflections of previous occurrences. What is, after  
I experienced was not the awakening tion or a  
from a dream but the restoration of a brain, for  
particular department of my consciousness. were bound  
At the time the events related actually properly to  
took place I was in a hysterical state and of my thro  
inclined to believe that there was really a end final  
psychic manifestation, a post mortem message condition.  
from my mother, but I soon dismissed this due to my  
idea as sheer nonsense. I am proving waver by he  
constantly, by every thought and act of mine, tender men  
concentrate



gotten that I am nothing more than an automaton re-  
sponding to external stimuli and passing  
through an infinitude of different existences,  
from the cradle to the grave.

The explanation of these mental phenomena  
is, after all, very simple. Through long concentra-  
tion on a special subject certain fibers in my  
brain, for want of bloodsupply and exercise,  
were benumbed and could no longer respond  
properly to outside influences. With the diversion  
of my thoughts they were gradually vivified  
and finally brought back to their normal  
condition. The desire to see my mother was  
due to my examination of some artistic fabrics  
woven by herself which had awakened in me  
tender memories shortly before I began to  
concentrate. I heard the music because my



2016 N. W. 27th. Street  
Gainesville, Florida. 32605  
Feb. 13, 1977 8

Dear Mr. Ratzlaff:

Sorry for the delay in answering your letter but lately I have had so many many speaking engagements I have not had the time even for my lab.

You may certainly use my photographs in your book with credit. Please be sure and send me a copy when it is published - also the bibliography.

The oval portrait is of Angelina Trbojevic (Tesla) Tesla's oldest sister born in Senj.

The one with the broad forehead is of Milka Qlunichic Tesla's second oldest sister born in Senj.

The last with the buttons on her dress is Marica Kocanovic or Kosanovich (Tesla) his youngest sister born in Smiljan like Tesla.

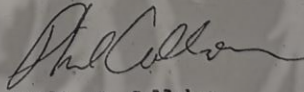
DANE → N  
Dave his oldest brother apparently died from a fall down cellar stairs when he was 12 years old (no photographs of him or the mother. He was born in Senj).

Some have said that before he lost consciousness and in delirium he accused Tesla of pushing him. He died later from the head injury - probably a hematoma. Whether the story of Tesla pushing his brother in a boyish scuffle is true or not I do not know.

Marica's son Sava N. Kosanovich later became Minister of State for Yugoslavia. Marica was also a very good mathematician like Tesla.

I hope I have been some help. Use this letter as permission to use my photographs with credit.

Sincerely,



Philip S. Callahan



LETTERS

TESLA, NIKOLA - 1934, DECEMBER 17

OBJECT  
COUNTRY

Letter  
United States  
New York, New York

ACC. NO. 67.64.2 A-B-C

NEG. NO.

MATERIAL

MAKER

DATE

December 17, 1934

DIMENSIONS:

L. 6 3/4" W. 5 3/8"

DESCRIPTION: 12 page (3 sheets) Holograph signed letter from Nikola Tesla (American electrical inventor) written in the Hotel New Yorker and addressed to G.S. Viereck, psychologist, telling him about a strange dream experience concerning Tesla's mother; the letter concludes by saying he would be delighted to meet Mr. Macfadden (Bernarr).

REMARKS: Letter paper contains Tesla's monogram.

SOURCE: Purchased from:

Goodspeed's Book Shop, Inc.

LOCATION Library

PHOTOCOPIED FROM ORIGINALS IN THE  
ARCHIVES & LIBRARY, HENRY FORD MUSEUM  
& GREENFIELD VILLAGE, DEARBORN, MI



# REV. W. C. NEVILS, EDUCATOR, WAS 77

Ex-President of Georgetown  
and Jesuit 59 Years Dies  
—Led U. of Scranton

The Rev. W. Coleman Nevils of St. Ignatius Loyola Church, a leading Roman Catholic educator and former president of Georgetown University in Washington, died yesterday at St. Vincent's Hospital. He was 77 years old.

Father Nevils had been a member of the Society of Jesus for fifty-nine years. For the last thirty-seven years he had been a superior, holding various administrative posts. He was stricken with coronary thrombosis eight months ago and suffered a new attack last Saturday. He remained in a coma until his death.

William Coleman Nevils was born in Philadelphia on May 29, 1878, the son of Andrew P. and Mary Coleman Nevils. After completing classical studies at St. Joseph's College there, he entered the Society of Jesus in 1896. Father Nevils took philosophical studies at Woodstock College in Maryland. He taught Latin and Greek at Boston College High School in Boston and Loyola High School here from 1903 to 1908.

## Ordained in 1911

Returning to Woodstock College for theological studies, he was ordained in 1911 and completed his clerical training at St. Andrew-on-Hudson in 1914.

After serving as Professor of Rhetoric at St. Andrew-on-Hudson and of philosophy at Holy Cross College, Father Nevils joined the Georgetown faculty as a lecturer in sociology.

In 1918 he was named dean of the University, and chancellor the next year. He held the latter post until 1924. Father Nevils was named regent of the Georgetown School of Foreign Service in 1920, serving until his appointment as dean of Shadowbrook Jesuit House of Studies in 1924.

He returned to Georgetown in 1928 as president. During his seven-year term, he became a well-known figure in Washington. A handsome man with a quick and cultivated mind and a gift for public speaking, he made wide circles of friends, who remembered him for his kindness and humility.

From Georgetown, Father Nevils came to New York for a six-year period during which he was rector of Loyola and Regis High Schools and of St. Ignatius Church.

When the Jesuits took over the conduct of the Catholic College in Scranton, Pa., and transferred it into the University of Scranton in 1942, he was appointed the university's first president.

## Campion House Superior

In 1947, Father Nevils was named superior of Campion

# HERMAN B. DELMAN, A SHOE DESIGNER, 60

Herman B. Delman, noted shoe designer, died yesterday in his apartment at the Madison Hotel after a long illness. His age was 60.

Mr. Delman was also well-known as the owner of a successful racing stable. He was born in Portersville, Calif., and went to school in Portland, Ore., where his family owned a small shoe store.

After service in the Marine Corps in World War I, Mr. Delman opened a shoe shop on Madison Avenue, with several craftsmen working in an oval window. The store attracted the attention of society and Mr. Delman became a leader in the shoe-design field.

About twenty years ago, Mr. Delman founded Del Farm, near Louisville, Ky. Among his more successful racehorses were How, Roaming and Judy Dunstan. He retired as head of the Delman Shoe Company last year and went to live in Palm Beach, Fla.

## Deaths

ADAMS—George Webster, on Oct. 12, 1955, in his seventy-sixth year, of Guilford, Conn. Husband of Hester Ferris Adams; father of Mrs. Henry P. Bakewell and Alexander Huel Adams. In lieu of flowers, contributions may be sent to Christ Church, Guilford. Time of services will be announced later.

AGETON—Jane Berren, at Flushing, N. Y., on Wednesday, Oct. 12, 1955, wife of the late Charles M. Ageton and sister of John T. Berren. Services at Walter B. Williams Funeral Home, 41-50 149th Place, Flushing, N. Y., on Saturday, Oct. 15, at 11 A. M. Interment Flushing Cemetery.

BAER—Benjamin B., suddenly, Oct. 11, beloved husband of Clara E. Baer. Services Thursday, Oct. 13, at 1 P. M., "The Riverside," 78th St. and Amsterdam Ave. Burial in the cemetery.

BARRE—Harriette Anna (nee Marshall), in her eighty-eighth year, devoted mother of Margarette P. Barre, at the St. John's Hospital, 450 East 182d St., until Friday, P. M. Services at the Ascension Church, 290 East 161st St., 8:30 P. M. Burial Saturday, Oct. 15, at 10 A. M. in the cemetery.

BRIGGS—Michael, beloved husband of Helen, devoted father of Robert, dear grandfather and dear brother. Services today, 1 P. M., at the St. Vincent's Hospital, Queens Boulevard and 78th Road, Forest Hills.

BUTTS—Rebecca, The Officers, Staff and Executive Board of Local No. 1102, R. D. 8, St. 15, announce with sorrow the passing of Rebecca Butts, beloved sister of Brother Harry Peterson, and extend our deepest sympathy to him.

BOND—Fannie Park, suddenly, in Arlington, Va., in her eighty-sixth year, aunt of Henry B. Raymond, interment private at Greenfield Cemetery, Hempstead, N. Y. Kindly omit flowers.

BRADY—Grace H., Oct. 11, 1955, beloved wife of Charles J. Brady, devoted mother of Joan B. Kolomick and Charles E. 3d. Friends may call at the Friedman Funeral Home, 190 Middle Neck Road, Great Neck, N. Y., 3 to 5 and 7 to 10 P. M. Solemn Requiem Mass St. Alphonsus R. C. Church, Great Neck, N. Y., Friday, Oct. 14, at 10 A. M.

BURGHAY—Frank B., on Oct. 12, 1955, in his eightieth year, lovingly survived by his daughter, Natalie, his sister, Ethel, his grandson, Jeffrey, and his nephew, Robert. Friends may call at Frank E. Campbell, Madison Ave. at 81st St., until Friday, 10 P. M. Services will be private. It was Mr. Burghay's special wish that flowers not be sent.

BURTON—Helen B., on Oct. 12, 1955, beloved wife of George H., loving mother of Mrs. Edward G. Swenney, devoted sister of Mrs. Charles O. Kramer, and Mr. William D. Kelly. Reporting at "The Abbey," Lexington Ave. at 61st St., Requiem Mass Saturday, Oct. 15, at Church of St. Vincent Ferrer, Lexington Ave. at 66th St., 10 A. M.

COMPTON—George W., Oct. 11, 1955, of 184 Clifton Ave., Brooklyn, beloved husband of Helen E. and father of Janet Compton Stein. Funeral from the Fairchild Chapel, 351 Atlantic Ave., Brooklyn, Sunday, Oct. 16, at 10 A. M. Interment Holy Innocent's R. C. Church, Friday, 10:30 A. M.

DELMAN—Herman B., beloved husband of Anna Rita, loving father of Maury and Deirdre, dear brother of Max Delman and Rose Lasky. Services at 2 P. M. at Frank E. Campbell's Funeral Home, Madison Ave. and 81st St., in lieu of flowers, please contribute to the Cancer Fund.

DELMAN—Herman B., The executive and employees of Bergdorf Goodman are profoundly saddened by the passing of their business associate and close friend, Herman B. Delman, and wish to express their sincere condolences to his family.

DOWLING—Rosa Monroe, beloved wife of Joshua W., devoted mother of Mrs. M. J. Dowling. Services at 2 P. M. at the

HOUDLETT—Emil, on Oct. 11, 1955, resident of 256 Beach 80th St., Rockaway Beach, L.I., loving brother of Albert, William, Walter, Hugo, Alfred, Elsie and Mrs. Sadie Wischke. Son of the late Albert Y. and Sadie Houdlett. Reporting at Hillsbrand Funeral Home, 1238 Cross Bay Boulevard, Broad Channel, L. I., Monday, Services Friday, Oct. 14, at 8:30 P. M. Funeral Saturday, Oct. 15, at 2 P. M. Interment Evergreen Cemetery.

HUBBELL—Ella, on Oct. 11, 1955, at her home, Garden City, L. I., wife of George L. Hubbell, mother-in-law of Mrs. Philip S. Lord, Mrs. A. Waldron Stone, John Platt, George L. Jr. and Sherwood Hubbell. Services at the Cathedral of the Incarnation, Garden City, Thursday, 11 A. M. Interment at Chapelin, N. Y. Friday at 2:30 P. M. In lieu of flowers contributions may be made to the Garden City Library.

JAMES—Grace B., beloved wife of Leon C. and mother of Mrs. Henry Johnston, Mrs. George Wertz and Alfred James, on Oct. 12, 1955, at her home, 59 Maple Hill Drive, Larchmont, N. Y. Services at The Rev. T. Davis Memorial, 14 LeCount Place, New Rochelle, 10 A. M. Friday, Interment Cleveland, Ohio.

JOSEPH—Joseph A., of the St. Marie Hotel, died Oct. 12. Services at "The West End," 200 W. 81st St., on Friday, 10:30 A. M. In lieu of flowers, remembrances may be sent to Irvington House.

JOSEPH—Israel, of the City of New York, records with deep sorrow the death of Joseph A. Joseph, and extends sincere sympathy to his bereaved family. CHARLES BALLIN, President. MAX S. WEILL, Honorary Secretary.

KARATZNIK—Morris, on Oct. 11, 1955, beloved husband of Rebecca, devoted father of Saul, Samuel and Harry Rosenzweig. Services Friday, Oct. 14, 10 A. M., "The Riverside," 78th St. and Amsterdam Ave. Burial at 115 West 86th St. Family sits at 115 West 86th St.

KAUFMAN—Henry J., Jr., on Oct. 12, 1955, husband of Marcia McAfee, father of Henry J. III, Karol and Michael, brother of Peter, Leo and Farrell. Reporting at Balaban's Funeral Home, 1400 Broadway, New York City, 10 A. M. Saturday, Oct. 15, at 10 A. M. Requiem Mass at the same place, 11 A. M. Saturday, Oct. 15, at 11 A. M. Interment Mount Calvary Cemetery.

KNOX—William, beloved husband of Rose, father of Rose and brother of Mrs. George W. Knox, on Oct. 12, 1955, at his home, Pelham Manor Gardens, Pelham Manor, N. Y. Services at the Rev. T. Davis Memorial, 14 LeCount Place, New Rochelle, N. Y., on Saturday, Oct. 15, at 10 A. M. Mass, please place copy.

KOCHMAN—Everett L., on Oct. 11, 1955, of 302 Rock Ave., Mount Vernon, N. Y., son of the late Reinhard and Minnie F. Blooming. Reporting at the Rev. T. Davis Memorial, 14 LeCount Place, New Rochelle, N. Y., on Saturday, Oct. 15, at 10 A. M. Mass, please place copy.

KOHN—Samuel, beloved husband of Nancy, devoted father of Robert, dear grandfather and dear brother. Services today, 1 P. M., at the St. Vincent's Hospital, Queens Boulevard and 78th Road, Forest Hills.

KRAM—William C., on Oct. 11, 1955, beloved husband of Mrs. Bertha Marcus, and loving grandfather. Services 2 P. M., Thursday, "Riverside Memorial," 78th and Amsterdam. Interment Old Mount Carmel Cemetery, Queens. Please omit flowers.

KRAM—William, The employees of Lady Scott, Inc. note with deep sorrow the passing of the beloved father of their director, Irving Kram, and extend sincere sympathy to the bereaved family. Employees of Lady Scott, Inc. note with deep sorrow the passing of the devoted father of my associate and director, Irving Kram, and extend our deepest sympathy to the bereaved family.

KRAM—William, The employees of Lady Scott, Inc. note with deep sorrow the passing of the devoted father of my associate and director, Irving Kram, and extend our deepest sympathy to the bereaved family. Lady Scott, Inc. LOUIS GOLDBERG.

KRUCHKOW—Joshua, beloved husband of Mildred, devoted father of Rosalind Leitchman, Dr. Norman and Arnold, loving father-in-law of Lawrence, Betty and Marjorie, adoring grandfather of Adrienne and Debbie Leitchman, David and Seth Kruchkov, dear brother of Benjie Sapozhnik, Henry and Morris Services at Brail Israel Community Center, 4th Ave. and 14th St., Brooklyn, today at 2:30 P. M. and tomorrow, Oct. 14, at 10 A. M.

KRUCHKOW—Joshua, Brail Israel community Center of Bay Ridge records with deep sorrow the sudden passing of its beloved and revered member and benefactor for the past forty years. He had served the community generously as President, Financial Secretary and as Co-Chairman of our Board. We will sorely miss his counsel and leadership. His beloved son, Dr. Norman Kruchkov, is presently serving as our President. We extend our sincere condolences to his bereaved wife and to his family.

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## Deaths

Adams, George W. Kossin, William J.  
Ageton, Jane B. Krausler, John F.  
Baer, Benjamin B. Kram, William C.  
Barre, Harriette Anna Kruchkov, Joshua  
Berger, Mitchell Kues, Frank A. Jr.  
Bittens, Rebecca Lilly, J. Joseph  
Bond, Fannie P. Liman, Morris  
Brady, Grace H. Lipman, Milton  
Burggraf, Frank B. Lomnitz, Walter F.  
Burtis, Helen E. McCain, Lella F.  
Comelis, George W. McMahon, Frank H.  
Delman, Herman B. Mahoney, James A.  
Dowling, Rosa Monroe Mallon, John C.  
Downing, Augustus C. Meador, James J.  
Ehrlich, Morris Naimeth, Albert  
Eskelin, Fred Nevils, W. Coleman  
Eklman, James P. O'Connor, Katherine  
Fee, Ann B. O'Reilly, Thomas  
Fraser, Adeline B. Fovill, Sam  
Freedman, Lawrence I. Richon, August L.  
Fricke, Martha L. Robinson, M. M. W.  
Gill, Edna M. Ragendorf, Fred  
Gold, Benjamin Salomon, Joseph B.  
Goldman, Julius Schab, Charles F.  
Goldstein, Jacob Schneider, Elvire  
Goldstein, Philip Seder, David William  
Grossman, Ella K. Shapiro, Libby  
Guggenheim, Joseph Shephard, Hermine D.  
Higman, John F. Solomon, Nathan  
Hital, Mary Solomon, Roger W.  
Holland, Joseph F. Siler, Mark  
Houdlett, Emil Sull, Henry  
Hubbell, Ella Platt Sullivan, Susan K.  
James, Grace B. Taylor, Jane B.  
Joseph, Joseph S. Van Dam, May E. L.  
Kabatnik, Morris Voss, Clara S. E.  
Kantor, Estelle Vorsanger, Bertha  
Kaufmann, H. J., Jr. Willets, Laura G. F.  
Knoop, William Zaltsky, Reuben  
Kochman, Everett L. Zohman, Nathan  
Kohn, Samuel

SHAPIRO—Libby, beloved wife of Benjamin, devoted mother of Jeanette Hoffman, Jerry and Irving, and dear brother of Ellis Spiers and David Kalish. Services, Hirsch and Sons, 16th St. and Jerome Ave., today at 1 P. M.

SHAPIRO—Libby, Independent Family Benevolent Assn. mourns the loss of its beloved mother. Services at Hirsch and Sons, 16th St. and Jerome Ave., today at 1 P. M.

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Hotel New Yorker  
New York December 20, 1934.

J. S. Pierce Esq.  
627 West 113 Street, N. Y.

My dear many-sided friend:

Thanks for your letters of the 18<sup>th</sup>  
and 20<sup>th</sup> inst. but I am afraid that I  
will get a swelled head from your praise.

I do not know whether I have brought  
out clearly the most striking feature of  
my mental adventure, namely, that everything  
I saw, heard or felt appeared entirely new  
to me. I never realized that I had



actually lived the same life before until  
the final shock that shook my body like  
an earthquake. What I went through is  
not likely to be repeated for there is  
not more than one individual in millions  
who would survive.

In view of your interest it occurs  
to me that if we had a brief talk you  
might write a short article including  
my letter and, perhaps, a honorarium  
could be realized. We are two "storm-tossed  
sailors stranded on the selfsame reef"  
and a little of the filthy lucre would  
be soothing in this plight.

I was glad to learn that the



until interview will come out soon as I  
like expect to render a real service to some  
is friends by converting them to my doctrine.  
is If it were not for my unbreakable re-  
lions solve I would have been delighted to  
accept Mr. Macfadden's hospitality. But you  
know that I have already cut down my  
proposed span of life by a quarter of a  
century in abandoning alcohol and must  
take good care to conserve the one hundred  
n-tones and twenty five years left.

As ever Sincerely yours

N. Tesla





New York December 31, 1934.

To my Friend and Incomparable Poet  
George Sylvester Viereck.

Fragments of Olympian Gossip.

While listening on my cosmic phone  
I caught words from the Olympus blown.  
A newcomer was shown around,  
That much I could guess, aided by sound.

-----  
"There's Archimedes with his lever  
Still busy on problems as ever.



The hardest is (I fear to be heard)  
How to clean the forest of his beard."

---

And that is Spinoza brooding there,  
He found that God is everywhere.  
But now he is worrying, you see,  
Where God's gravity center might be."

---

"I note Fermat, what trouble has he got?"  
"To remember that rule he forgot.  
Some think it was a practical joke,  
He takes it to heart, is all but broke."

---

"With this splendor and heavenly fare—  
Why do so many hopelessly stare?"



"They relish the nectar no longer  
And are craving for drinks much stronger.  
Nothing to do but to look around  
Is as hard a job as ever found."

---

"Below, on Earth, they work at full blast  
And news are coming in thick and fast;  
The latest tells of a cosmic gun.  
To be pelted is very poor fun.  
We are wary with so much at stake;  
Those beggars are a pest - no mistake."

---

"Too bad, Sir Isaac, they dimmed your renown  
And turned your great science upside down.  
Now a longhaired crank, Einstein by name,  
Puts on your high teachings all the blame."



Says: matter and force are transmutable  
And wrong the laws you thought immutable."

"I am much too ignorant, my son,  
For grasping schemes so finely spun.  
My followers are of stronger mind  
And I am content to stay behind,  
Perhaps I failed, but I did my best,  
These masters of mine may do the rest.  
Come, Kelvin, I have finished my cup -  
When is your friend Tesla coming up?"

"Oh, quoth Kelvin, he is always late,  
It would be useless to remonstrate."

Then silence -- shuffle of soft-clipped feet --  
A knock and -- the bedlam of the street.

Nikola Tesla  
Novica



IN DER NOT FRISST DER  
TEUFEL FLIEGEN.

"Wenn in der Not, der Teufel frisst Fliegen!"

"When ~~a man is~~ in a pinch, the Devil eats flies!"









Hotel New Yorker  
New York December 23, 1934.

G. S. Pierce Esq.  
627 West 113 Street  
New York

My dear Poet Laureate:

Addressing you in this eminently  
proper way I am reminded that I  
am myself a poet, of course, on  
a diminutive scale as I greatly  
confessed in my reference to a Bard



of whom you have probably never heard: but

"There is no sense in my verses.

But they are all up to date,

They are just like those of Austin

The new English Laureate!"

I was glad to learn from your letter  
of the 21<sup>st</sup> inst. that you consider  
my proposal practicable. It hardly  
need be stated that whatever is  
required will be due to your efforts  
rather than mine. The suggestion  
was not exactly to my liking



heard: but "wenn in der Not, der Teufel  
frucht Fliegen!"

Hoping that your trip to Bermuda  
is prompted by considerations other  
than health & close with the  
letter customary casualty

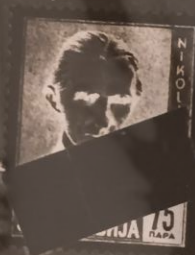
"Merry Christmas and Happy  
New Year"

and expression of my admiration  
and regard.

Your friend

N. Tesla

George Lytle Vores







Hotel New Yorker  
New York April 1. 1935.

Leo Sylvester Viereck Esq  
627 West 113 Street  
New York.

My dear Viereck:

Answering at this late date  
your kind letter of March 25<sup>th</sup>.  
I was surprised that I did hear  
from you. I know that you are  
trying to take several fists out of one.  
I am horrified to think that



a young man take yourself his to  
take Opium for any purpose whatever.  
It is a treacherous habit forming drug.  
If you must resort to medicine why  
not use Bromide of Potassium? It is  
harmless and soothing while Opium is  
dangerous and desecrating.

I am thinking of you often more than  
you do of me but of late I have had  
a lot of hard work and harder trouble.

Hoping that your nervous system and  
pituitary gland will soon return to nor-  
malcy I remain, with respectful regards  
to Mrs. Viereck, your admiring friend

H. T. Fiske





Hotel New Yorker  
NEW YORK

April 7, 1935.

My dear Viereck:

Acknowledging your letter of  
the 4<sup>th</sup> inst. - the Opium Tincture  
may not be habit forming but  
it will make your precious brain  
sluggish and predispose you to  
rheumatism. I wish you would  
stop taking the poison.

Too bad that the greatest



poet of America is no better  
situated than a struggling inventor.  
Now about writing a little article  
on Spiritism and drawing in my  
experience as told in a letter to  
you. The spiritists are so crazy  
that they will claim I got the  
message all right but as a  
crass materialist I was prejudiced.  
If an article by you assisted a little  
by my communication would bring P.S.  
I am  
can de



better a good honorarium from the New  
venter. ~~York~~ Times. Eventually, you will  
article make a corload of money from the  
say sale of your answering trilogy.

Our friend Macfadden is probably  
also having his hands full. He should  
go to Washington and show the brain  
trustees how to get the country out  
of the depression.

Ever yours sincerely

little H. T. Tola.

P.S. I am admiring you so much that I  
am developing a kind of your handwriting.





Hotel New Yorker

September 11, 1935

George Sylvester Viereck Esq  
305 Riverside Drive  
New York.

My dear Viereck:

I hope you will excuse me for my seeming negligence in acknowledging your always welcome letters. But the circumstances which have confronted me of late were quite unusual.

Under enclosure I am returning your original interview which you had probably intended to correct. You did not get sufficient information from me in our short talk and, besides, the introduction would have placed me in a difficult position. We must be careful if we are to keep our hardearned reputations.

The few accompanying excerpts from the newspapers may interest you.

With best regards as ever

Yours very sincerely

N. Tashar



C O C  
P P O  
Y

July 6, 1936

Dr. Nikola Tesla  
New York City

Dear Dr. Tesla:-

I wish to extend to you my congratulations on your 80th Birthday, also to remind you of the pleasant year that I spent with you, as your assistant during 1917, when you were at the Pyle National Company in Chicago.

Yours for many more Happy Birthdays,

Walter W. Wilhelm  
3500 East Biddle Street  
Baltimore, Maryland

WWW:DFB

## TUBE TALK

by Ted Hannah, K3CL

The year was 1936. In Europe, Hitler occupied the Rhineland; civil war erupted in Spain; and in England, Edward VIII gave up his throne, saying that he found it impossible to discharge his duties as king "without the help and support of the woman I love," Mrs. Wallis Warfield Simpson.

In America, Frank Capra won an Academy Award for directing "Mr. Deeds Goes to Town"; Margaret Mitchell published *Gone With the Wind*; and the most expensive Ford automobile, the stylish convertible sedan, could be yours for \$780.

There were approximately 40,000 amateur radio operators in the United States in 1936, many of them using homemade transmitters and receivers, although some of the more affluent hams were using the new Hammarlund Super Pro receiver, the first of a long and illustrious line of Super Pros.



## **PB Prometheus Books**

For further information contact:  
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Tel. 716-837-2475  
If no answer  
716-837-0306

### **BOOK NEWS**

NOTED CHICAGO LAWYER PUBLISHES BOOK ON VIERECK, LITERARY GENIUS  
AND AMERICAN DEFENDER OF NAZI GERMANY

ODYSSEY OF A BARBARIAN: THE BIOGRAPHY OF GEORGE SYLVESTER VIERECK  
by Elmer Gertz

Not everyone remembers George Sylvester Viereck, once a renown figure in the literary, journalistic, and political life of America. Viereck was the son of an illegitimate offspring of the Hohenzollern dynasty. As a boy, Viereck left his native Germany to come to America, where he began to write poetry. His verse came to be regarded as brilliant--exhibiting the genius of a young Goethe. By age 20, Viereck had already achieved some notoriety as a poet. Having edited several literary periodicals--including The International--Viereck continued to write poetry, and before the age of 30 was recognized by many as a leading figure in the American poetry scene.

Viereck's literary fame came to a quick halt, however, when sympathy for his native country became a preoccupation in his writings. During World War I he was often accused of being traitorous. Later, as a highly paid journalist, Viereck interviewed such famous figures as Einstein, Mussolini, and Hitler. Viereck supported the latter, and during World War II was imprisoned for issuing pro-Nazi propaganda. He died in 1962.

This engaging, lucid account of Viereck's life is written by Elmer Gertz, noted attorney for Nathan Leopold, Jack Ruby, and others. Viereck and Gertz were close friends for many years, despite their strong differences. They exchanged hundreds of fascinating letters, many of which are woven into this provocative study. This book takes an honest and revealing look at Viereck. As the first definitive biography of this enigmatic figure, Odyssey of a Barbarian is a much needed book. Of particular interest to poets, historians, and social scientists, it will also intrigue the general reader.

305 Pages  
Cloth: \$17.95

Publication Date: March 27, 1979  
ISBN 0-87975-108-8



EN ROUTE FOR WASHINGTON

On a trip from Atlanta to Washington, I wore both handcuffs and footirons. The footirons were not even removed in bed. It happened to be my Birthday, December 31st, 1944. Hence these lines.

"When warclouds seemed to gather  
I wrought a mighty spell,  
Invoking Freedom's Father  
And His Farewell.

And now with mock and frown  
They drag me to my doom,  
The city once his-town  
And now his-tomb.

-----  
I am the dreg of dregs,  
An Isolationist,  
With iron on my legs  
And on my wrist.

For those who will not kneel  
Irons and handcuffs too:  
This is a savage Deal -  
But is it New?

Through weary centuries  
Since Cain his brother slew  
These were the remedies  
That tyrants knew.

-----  
I am your Lover true,  
Land of the Brave, the Free.  
Are handcuffs, irons too,  
Your gift for me?

Handcuffs and irons too,  
My Goddess, Liberty,  
These shame and fetter you,  
They shame not me.

While far from Washington  
With soul and heart aflame  
At Anzio's Beach, my son  
Died in your name.

George Sylvester Viereck



(As revised by Tesla himself  
George Sylvester Viereck.)

## I EXPECT TO TALK TO MARS

by

Nikola Tesla

As Told To

George Sylvester Viereck.

Nikola Tesla is the last of the Giants of the Electric Age. Civilization would not be what it is today if he had not discovered the Rotary Magnetic Field and invented the rotary motor. His fellows describe the venerable scientist as the "inventor's inventor." Recently, on the occasion of his 80th birthday, both the Serbian and the Yugoslav Governments honored Tesla with high decorations.

In 1899, while experimenting with a wireless receiver of extraordinary sensitivity, I detected faint signals from Mars, our bother planet. I could not interpret the signals, but they seemed to suggest a numerical code, one - two - three - four. The Martians, I assumed, used numbers in their attempts to communicate with the Earth because arithmetic constitutes a universal language.

In my attempts to elucidate the problem of these impulses from outer space, I received ridicule instead of co-operation. Other, more practical, problems monopolized my attention, but the idea of experimenting with inter-planetary communications never ceased to intrigue me. One reason for this was the author of the article. Said the whole story was pure imagination on the part of the author of the article.

(Marginal comments by John J. O'Neill)

O'NEILL IS INCORRECT IN THIS. TESLA ANNOUNCED IT IN JANUARY, 1900.

The first public statement in this subject was made about 1905. It is since I did not locate. I spoke to Tesla about the matter when a full page article appeared in the New York World Magazine, at that time. He admitted knowing strands in his vision, the source of which he did not know but denied he had made any statement about Mars, the signals or any other subject to the author of the article. Said the whole story was pure imagination on the part of the author of the article.

Tesla incorrect. Tesla would not have claimed this. The rotary motor was invented as a direct current drive by Davenport about 1888. Tesla was born.



Tests never had  
a laboratory in U.S.

severing my very pleasant relations with George Westinghouse and Thomas Edison, notwithstanding tempting propositions from both, was my desire to follow my own speculations in the great laboratory I built in New Jersey. ? where?

Some of my discoveries and inventions have made electric history. They were practical devices, susceptible of commercial exploitation. But my chief recreation was to study the universe, and the place of the earth in the starry system. Until man can talk in some manner with the inhabitants of other stars, he remains an earth-bound worm. My most recent discoveries, if verified by experience, will give wings to the earth-worm. To me, I trust, they will give abiding fame. The man who evolves a method of communicating with other planets, will be remembered in human annals after all present inventions are dipped in oblivion. I would willingly sacrifice all my other achievements to realize this dream. I am certain that I have found a solution theoretically beyond dispute.

I believe that my recent inventions, bearing upon this point, are more important than any of the seven hundred patents I previously gave to the world. Man reaches his maximum power in his old age, not in middle life. Every one should have a decade or so to sum up his life work after seventy-five. Every one would, if we lived sensibly. After man is seventy-five, he has gained so much experience that he can solve many problems that hitherto seemed insoluble. I hope, by systematizing my work and organizing the income and expenditure of my body with

Tests expected to last 140.

$$\frac{140}{75} = \frac{82}{x}$$



scientific precision, to reach the ripe age of 140. Long before that, communication with Mars and other stars will have become practicable.

I do not envisage an Inter-planetary Post Office or an Inter-planetary Telephone Central. An imaginative friend of mine suggests that it will be possible to pick up a Tesla phone, dial Mars 2211, and speak to a friend on a distant planet. That, for reasons that will presently appear, is beyond the range of possibility. But it will be possible to flash a message to Mars and to receive some response from intelligent entities there.

H. G. Wells, in an audacious short story, "Star-Begotten", advances the theory that the Martians, recognizing that they are living on a dying planet, are attempting to influence life on earth, with the object of reproducing themselves, so to speak metaphysically, in us. He insinuates that cosmic rays, directed from Mars, affect our genes, those carriers of human characteristics, and produce deviations in the human species important enough to create in time a new, more civilized human race.

*I doubt, very much, that Tesla would make this mistake in his speaking of cosmic rays which he attributed to the sun. He accepted the influence of the sun on the earth's life.*

Mr. Wells forgets to tell that Mars is 10,000 light years away from the earth. If rays from Mars are to affect the present generation of men, they must have been dispatched 10,000 years ago, when most of us were howling savages. Rays transmitted today (unless the Martians have anticipated my discovery) would affect men 10,000 years hence.

*This was in his early middle age. The poem, from which you*



Quote a stage under the Tesla was a firm believer in Newtonian celestial mechanics, which includes Kepler's laws on planetary distances and periods. It would be impossible to fit a 10,000 l.y. orbit for Mars into Newtonian mechanics.

If a man wanted to ring up Mars, he would have to wait 10,000 years or more, because sound travels more slowly than light, before his voice could reach a listening ear. Even if his voice traveled with the speed of light, it would not reach the party at the other end of the line until the party making the call had been buried 10,000 years. Message and answer would fall on dead ears. That is one of the chief difficulties involved in inter-planetary communication. The movement of the stars, which makes it difficult for any impulse to reach a pre-defined spot, constitutes another difficulty.

Yet, I believe, that intelligent, sentient life exists on many planets, including Mars, and in universes revolving about suns more gigantic than ours. Mars in many respects resembles the earth, an earth grown old. It is logical to assume that the biological evolution of the Martians more or less parallels that of the human species, although they may have reached a stage far in advance of ours. Their perception of the external world must correspond more or less to ours. They see, smell, feel, hear, life through the same senses as we.

It is no strain on the imagination to assume some super-Tesla on Mars, perfecting at this very moment some new system of communication with us, since we have been deaf to all previous signals. But unless a revolutionary discovery enables the Martians and us to overcome the gap in time, both their and our pre-



our present civilization will have perished before a message from one star to another can reach its destination.

Theoretically it might be possible to create some self-perpetuating body of scientists that would keep its ear glued to an inter-stellar telephone for ten times ten centuries; practically I fear it is out of the question. New nations, new mountain-ranges, new oceans, may be born before the clock of the universe registers another ten thousand years.

Communication between two planets involves two essential conditions:

- 1) Coincidence in Time
- 2) Similarity of Evolution.

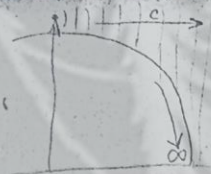
To meet the first condition, we must flash our message, not with the speed of light, the fastest at present known to science but, to all intents and purposes, instantaneously. To meet the second condition, it is essential that the inhabitants of the planets, with which we desire to establish some contact, have reached a phase of evolution similar, or superior to ours. There can be no intelligible or intelligent intercourse between an Amoeba and a Goethe or a Shakespeare.

It is safe to assume that somewhere in the universe, probably on Mars, the prerequisites for an interchange of ideas exists. But how can we meet the first condition? -- to overcome the handicap of distance and time? We need a force that transmits our message with infinite velocity. Unfortunately, the velocity of every known ray, however fast, is finite.

In Tesla's  
discussion of  
the transmission  
of wireless waves  
you will find a  
gross error.  
↓



He describes a component of his waves which moved around the surface of the earth and attained infinite velocity in traversing the first quadrant, while the same wave was moving in a straight line at the velocity of light.



I believe that I have circumvented the difficulty.

He made this statement to me. I asked him to think at clear points and tell me if I needed to provide with his drawing to transmit energy through the dark area of the crescent moon. He said he could do this but refused to discuss details.

My invention makes it possible to transmit enormous amounts of energy through inter-planetary space and thousands of light years with practical instantaneity. With such a force it is possible to dispatch signals that can be detected by intelligent entities on other planets - now.

We need not flash the message directly to the other planet; we might use the moon as our writing pad, and inscribe our message on its pallid surface. The planetarians can reply flash by flash to our communication, if they too have solved -- as I think they must have -- the problem of instantaneous transmission.

How?

This was not discussed as the moon is less than 3 light seconds distant.

Tests had been devised for destroying airplanes and warships at great distances. I had been his claims were meaningless without a demonstration. I offered to try to get the government to supply a target ship if he would agree to try to destroy it at any distance from 1 mile to 1000 miles. He insisted he would give such a demonstration.

The mathematics and physics are so intricate that it is impossible to explain my plan in language intelligible to the layman. For the present it must suffice to state that I use a new kind of energy and the combined resources of thirty-six highly technical inventions to beat the obstacle of time and space. The description of these inventions, even in technical symbols, would take a great deal of space. Fortunately the apparatus I have devised is small and compact. In spite of its modest size, it can flash energy in considerable amount through interstellar space without loss or dispersion.

Other men will have to collaborate with me to work out the details of the plan for interplanetary communication, I

expect to confer with my friend George E. Hale, the great

over



only on his own terms. It was then that I proposed that  
he put a bright spot on the dark part of the moon as a demonstration  
of the powers of his device, as such a demonstration would enable  
him to get his own terms from the government.

This discussion, I believe, gave him his first thoughts  
concerning the moon as a communication target since the  
moon is unobscured.

Putting a bright spot on the dark area of the moon is  
much different than putting one on the bright areas, or  
"pallid moon" as stated herein. Having the "planetary reply"  
is another misconception of the situation.



*Tests made such a statement in his last "birthday" mass interview, arranged by the press agent of the hotel at which he was staying as a publicity stunt to get the hotel's name in the newspapers. Also, I believe, in a statement, in connection with some minor celebration, which he should not have made in view of his condition.*

astronomist of the Mount Wilson Observatory in Pasadena, California, who knows more about solar energy than any other human being, concerning the practical use of my apparatus in conjunction with his researches. In the meantime I shall submit to the Institute de France an accurate description of my devices, data and calculations, together with my claim for the prize of Fcs.100,000, offered by Pierre Guzman for the first communication with other worlds.

I am convinced that the prize will be awarded to me because, I repeat, the problem is solved. The money is a trifling consideration, but for the great historical honor of being the first mortal to achieve the miracle of a planetary communication I would be almost willing to give my life.

Relativists may object that my efforts will be thwarted by what Einstein calls "the curvature of space". My own investigations based on a new dynamic theory of gravity demonstrate conclusively that space is not curved. According to the Relativists, space is distorted into curves by the influence upon it of celestial bodies. But the law of cause and effect is immutable. Every action induces a reaction. If the planets act upon space, space in turn reacts upon the planets. If the planets pull space out into curves, the counter-pull of space upon the planets neutralizes the effect, and straightens out the curves. Inasmuch as action and reaction are coexistent, the supposed curvature of space is a figment of the mathematical imagination.

*Tests was opposed to Einstein's relativity and other theories as were all the "die hard" Victorian or physicists of his age.*

*Tests failed to grasp the fundamental of Einstein's first theory.*



Simple relativity is as old as  
our earliest philosophy records.

The relativity theory, by the way, is much older than its present proponents. It was advanced over two hundred years ago by my illustrious countryman Boscovich, the great philosopher who, not withstanding other and multifold obligations, wrote one thousand volumes of excellent literature on a vast variety of subjects. Boscovich dealt with relativity, including the so-called time-space-continuum, which enters into my calculations for inter-planetary calculations, masterfully and faultlessly. What he wrote was gold, compared with which the modern additions are dross.

My invention will carry my signals through space, curved or uncurved, with instantaneous precision. My statement will be attacked as fantastic. I am accustomed to that. It has happened to many of my ideas. But in most cases those who scoffed at first, eventually agreed with me -- if they lived long enough. I disagreed with Thomas Edison on the most effective electrical current. Edison championed the direct, I the alternating current. Events have justified my preference. Alternating currents are the life blood of industry today. Events will verify many of my predictions.

Even with our present limited knowledge, it is safe to venture certain prophesies. I visualize the whole earth as a huge brain in which before long all people will be able to communicate with each other through vest pocket radio equipments, sufficiently delicate to catch thought waves. Planes will be operated, newspapers printed, by wireless. Man will



tap the eternal heat reserves of Mother Earth to run his machines; he will tame Vesuvius as he has (with the aid of one of my inventions) Niagara.

Most of the changes enlisted will come, because man will be able to transmit power, power gained not only from the earth but from the motion of the stars, across vast distances; land, air and sea will be his carriers. All this is within sight of the present generation, the product of the imperfect human brain, but the imagination balks at the immense possibilities that will be open to man when, after perfecting my system of inter-planetary communications, he will be able to gather knowledge accumulated by intelligent beings on other stars.

*I admit that Tesla  
was held the thought that  
the incandescent stars are unobscured.*



As revised by Tesla himself  
from the Verne

I EXPECT TO TALK TO MARS  
by  
Nikola Tesla  
As Told To  
George Sylvester Viereck.

---

Nikola Tesla is the last of the Giants of the Electric Age. Civilization would not be what it is today if he had not discovered the Rotary Magnetic Field and invented the rotary motor. His fellows describe the venerable scientist as the "inventor's inventor." Recently, on the occasion of his 80th birthday, both the Serbian and the Yugoslav Governments honored Tesla with high decorations.

In 1899, while experimenting with a wireless receiver of extraordinary sensitivity, I detected faint signals from Mars, our brother planet. I could not interpret the signals, but they seemed to <sup>suggest</sup> ~~be~~ a numerical code, one-two-three-four. The Martians, I assumed, used numbers in their attempts to communicate with the Earth because arithmetic constitutes a universal language.

In my attempts to elucidate the problem of these impulses from outer space, I received ridicule instead of cooperation. Other, more practical, problems monopolized my attention, but the idea of experimenting with inter-planetary communications never ceased to intrigue me. One reason for



severing my very pleasant relations with George Westinghouse and Thomas Edison, notwithstanding tempting propositions from both, was my desire to follow my own speculations in the great laboratory I built ~~for myself~~ in New Jersey.

Some of my discoveries and inventions have made electric history. They were practical devices, susceptible of commercial exploitation. But my chief recreation was to study the universe, and the place of the earth in the <sup>h</sup>stary system. Until man can talk in some manner with the inhabitants of other stars, he remains an earth-bound worm. My most recent discoveries, if verified by experience, will give wings to the earth-worm. To me, I trust, they will give abiding fame. The man who evolves a method of communicating with other planets, will be remembered in human annals after all present inventions are dipped in oblivion. I would willingly sacrifice all my other achievements to realize this dream. I am certain that I have found a solution theoretically beyond dispute.

I believe that my recent inventions, bearing upon this point, are more important than any of the seven hundred patents I previously gave to the world. Man reaches his maximum power in his old age, not in middle life. Every one should have a decade or so to sum up his life work after seventy-five. Every one would, if we lived sensibly. After man is seventy-five, he has gained so much experience that he can solve many problems that hitherto seemed insoluble. I hope, by systematizing my work and organizing the income and expenditure of my body with



scientific precision, to reach the ripe age of 140. Long before that, communication with Mars and other stars will have become practicable.

I do not envisage an Inter-planetary Post Office or an Inter-planetary Telephone Central. An imaginative friend of mine suggests that it will be possible to pick up a Tesla phone, dial Mars 2211, and speak to a friend on a distant planet. That, for reasons that will presently appear, is beyond the range of possibility. But it will be possible to flash a message to Mars and to receive some response from intelligent entities there. H. G. Wells, in an audacious short story, "Star-Begotten", advances the theory that the Martians, recognizing that they are living on a dying planet, are attempting to influence life on earth, with the object of reproducing themselves, so to speak metaphysically, in us. He insinuates that cosmic rays, directed from Mars, affect our genes, those carriers of human characteristics, and produce deviations in the human species important enough to create in time a new, more civilized human race. Mr. Wells forgets to tell that Mars is 10,000 light years away from the earth. If <sup>from Mars</sup> ~~their rays~~ are to affect the present generation of men, they must have been dispatched 10,000 years ago, when most of us were howling savages. Rays transmitted today (unless the Martians have anticipated my discovery) would affect men 10,000 years hence.



If a man wanted to ring up Mars, he would have to wait 10,000 years or more, because sound travels more slowly than light, before his voice could reach a listening ear. Even if his voice traveled with the speed of light, it would not reach the party at the other end of the line until the party making the call had been buried 10,000 years. Message and answer would fall on dead ears. That is one of the chief difficulties involved in inter-planetary communication. The movement of the stars, which makes it difficult for any impulse to reach a pre-defined spot, constitutes another difficulty.

Yet, I believe, that intelligent, sentient life exists on many planets, including Mars, and in universes revolving about suns more gigantic than ours. Mars, ~~it is generally believed,~~ in many respects resembles the earth, an earth grown old. It is logical to assume that the biological evolution of the Martians more or less <sup>parallels</sup> ~~resembles~~ that of the human species, although they may have reached a stage far in advance of ours. Their perception of the external world must correspond more or less to ours. They see, smell, feel, hear, life through the same senses as ~~man~~ <sup>we.</sup> // It is no strain on the imagination to assume some super-Tesla on Mars, perfecting at this very moment some new system of communication with us, since we have been deaf to all previous signals. But unless a revolutionary discovery enables the Martians and us to overcome the gap in time, both their and our present civilization will



have perished before a message from one star to another can reach its destination.

Theoretically it might be possible to create some self-perpetuating body of scientists that would keep its ear glued to an inter-stellar telephone for ten times ten centuries; practically I fear it is out of the question. New nations, new mountain-ranges, new oceans, may be borne before the clock of the universe registers another ten thousand years.

Communication between two planets involves two essential conditions:

- 1) Coincidence in Time
- 2) Similarity of Evolution.

To meet the first condition, we must flash our message, not with the speed of light, the fastest at present known to science but, to all intents and purposes, instantaneously. To meet the second condition, it is essential that the inhabitants of the planets, with which we desire to establish some contact, have reached a phase of evolution similar, or superior to ours. There can be no intelligible or intelligent intercourse between an Amoeba and a Goethe or a Shakespeare.

It is safe to assume that somewhere in the universe, probably on Mars, the prerequisites for an interchange of ideas exists. But how can we meet the first condition? -- to overcome the handicap of distance and time? We need a force that transmits our message with infinite velocity. Unfortunately, the velocity of every known ray, however fast,



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of the Mount Wilson Observatory in Pasadena, California, who knows more about solar energy than any other human being, concerning the practical use of my apparatus in conjunction with his researches. In the meantime I shall submit to the Institute de France an accurate description of my devices, data and calculations, together with my claim for the prize of Fes.100,000, offered by Pièrre Guzman for the first communication with other worlds. *¶* I am convinced that the prize will be awarded to me because, I repeat, the problem is solved. The money is a trifling consideration, but for the great historical honor of being the first mortal to achieve the miracle of a planetary communication I would be almost willing to give my life. ~~for the greatest thing in history~~

Relativists may object that my efforts will be thwarted by what Einstein calls "the curvature of space". My own investigations based on a new dynamic theory of gravity demonstrate conclusively that space is not curved. According to the Relativists, space is distorted into curves by the influence upon it of celestial bodies. But the law of cause and effect is <sup>action induces a</sup> immutable. Every reaction. *¶* If the planets act upon space, space in turn reacts upon the planets. If the planets pull space out into curves, the counter-pull of space upon the planets neutralizes the effect, and straightens out the curves. Inasmuch as action and reaction are coexistent, the supposed curvature of space is a figment of the mathematical imagination.

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---



WESTINGHOUSE  
ELECTRIC & MANUFACTURING COMPANY



FROM New York

DATE January 3, 1939

SUBJECT Nicoli Tesla

~~Pittsburgh,  
Mr. E. B. Roberts,  
Assistant to Vice President  
Industrial Relations~~

I called upon Mr. Tesla last evening at the Hotel New Yorker, where he occupies room 3327. I got him on the telephone from the Hotel office. He said he was not seeing anyone at present but he was profuse in his thanks for my calling and we chatted for ten minutes. He said he had been badly injured by an automobile nine months ago and was slowly recovering from his injuries. He is 83 years old.

He appeared to be thoroughly clear-headed, in fact said that since his accident his mind seemed to be clearer than ever. He said he was about ready to write to our Chairman Mr. Robertson about our Company taking up with an invention or conception which he pronounced the most valuable work he had ever done; that other people wanted to go into it, but he retained his loyalty for Westinghouse and thought we should have the first chance. So our Chairman may hear from him.

I have no doubt your monthly communications are reaching him. Of course I had no way of ascertaining his financial condition. He said that he was walking around his room. Certainly his voice sounded astyuant and enthusiastic as it was 35 years ago. The Hotel Assistant Manager told me that he was occasionally seen about the Hotel, but remained most of the time in his room and apparently saw no one. He said that Mr. Tesla might not answer my telephone call, but he did, with the above result.

Mr. Tesla promised to let me know when he was able to see me. This, of course, was after my saying that I called in behalf of his many Westinghouse friends who wanted to know how he was and also to renew my own pleasant acquaintance with him. So I cannot tell whether his desire ~~to~~ not to have me come up was due to his not wishing to be disturbed or whether one of pride in not being sufficiently presentable. I will take a chance of calling him up again a little later.

I rather imagine his financial resources are rather meagre, for he probably never knew how to use money. I remember walking down the street with him one day when he stopped at a newstand, picked up half a dozen magazines and newspapers, pulled a big roll of bills out of his outside overcoat pocket, handed the top bill to the newsman and walked along with me. At that time he was living at the old Waldorf. This was during the period when he was building the Radio Station at Wardencliff, L.I. for which I sold him some \$75,000 worth of apparatus. He was then being financially backed by John Jacob Astor and some other wealthy people. That would have been about 1902. I have not seen him since. My impression in those days was that his ideas were extremely chimerical, for he



Mr. E. B. Roberts

-2-

1/3/39

talked so far over my head that he was not convincing. However, I kept some reservation, as I remembered what he once did for us.

He said last evening that in the last six months he had received honorary degrees from 22 different Universities in different parts of the world.

I return herewith the correspondence accompanying your letter of December 29th.

EHSniffin:FM

*E. V. Sniffin*  
Assistant to Vice President.



## WHO'S WHO, IN AMERICA (Vol. 21) 1940-1941

**NOTE:** The following personal sketch appears in the last edition of WHO'S WHO IN AMERICA, issued about two years ago. It is now sent for up-to-date revision, with a view to its inclusion in the 1940-1941 edition, *subject to editorial approval*. Please read the sketch with care, making necessary alterations.

The leading essentials of every sketch are: Full name, place and date of birth, full names of parents, education, college degrees (including dates), marriage (including full name and date). Please do not rewrite this sketch, which is now in type. Make your corrections on this sheet and return to

THE A. N. MARQUIS COMPANY,  
919 North Michigan Avenue, Chicago, Illinois

38043

July 9, 1856;

*induction*

**TESLA, Nikola**, electrician; b. Smiljan, Lika (border country of Austria-Hungary), 1856; of Greek descent; son of a farmer and of Georgina Mander, who was an inventor, as was her father; ed. 1 yr. at elementary sch., 4 yrs. at Lower Realschule, Gospić, Lika, and 3 yrs. at Higher Realschule, Gradist, Croatia, graduating 1875; studied 4 yrs. at Polytechnic Sch., Graz; in mathematics, physics and mechanics; afterward 2 yrs. in philos. studies at U. of Prague, Bohemia; (hon. M.A., Yale, 1894; LL.D., Columbia University, 1894; D.Sc., Vassar Polytechnic). Began practical career at Budapest, Hungary, 1881, where made his first electrical invention—a telephone repeater—and conceived idea of his rotating magnetic field; later engaged in various branches of engineering and manufacture. Since 1884 resident of U.S., becoming naturalized citizen. Inventor and discoverer: System of arc lighting, 1886; Tesla motor and system of alternating current power transmission, 1888; system of elec. conversion and distribution by oscillatory discharges, 1889; generators of high frequency currents, and effects of these, 1890; Tesla coil, or transformer, 1891; system of wireless transmission of intelligence, 1895; mech. oscillators and generators of elec. oscillations, 1894-95; researches and discoveries in radiations, material streams and emanations, 1896-98; high-potential magnifying transmitter, 1897; system of transmission of power without wires, 1897-1905; Chiefly engaged, since 1903, in development of system of telegraphy and telephony, and designing plant for transmission of power without wires, to be erected at Niagara. Address: The New Yorker Hotel, New York, N.Y.

*Tesla's Steam and  
Gas turbine and  
pumps; etc.*

NOV 10 1939

NOTICE: Should the subject of the above sketch not be living, will the person into whose hands this sketch may fall kindly return it immediately, and also furnish date of death.

To obviate the necessity of sending out another proof, please return this sketch even if no change be made. Every sketch must be accounted for before the book can go to press.

Please furnish here both home and business address, if not already correctly given above.

Home Address.....  
Business Address.....

*EC*



STANDARD TIME INDICATED
RECEIVED AT 104 W. 5th Ave. GARY, IND. NOV 21 1940
TELEPHONE YOUR TELEGRAMS TO POSTAL TELEGRAPH

Form 16



THIS IS A FULL RATE TELEGRAM, CABLEGRAM OR RADIOGRAM UNLESS OTHERWISE INDICATED BY SYMBOL IN THE PREAMBLE OR IN THE ADDRESS OF THE MESSAGE. SYMBOLS DESIGNATING SERVICE SELECTED ARE OUTLINED IN THE COMPANY'S TARIFFS ON HAND AT EACH OFFICE AND ON FILE WITH REGULATORY AUTHORITIES.

C38 30=HO NEWYORK NY 615P NOV 21 1940

M M DUCICH= 1100 Mass. Cloverleaf Dairy  
PRESIDENCE GARY 81540 GARY IND:

=OPROSTITE NIJE MI BILO MOGUCE ODMAH PRIZNATI VASU PLEMENITU  
POMOC. SVETI NIKOLA I VI NAJBOLJI SU MOJI PRIJAATELJI. ZELIM VA  
I OBITELJI NAJVECE ZADOVOLJSTYO PRILIKOM DANASJEG PRAZNIKA.  
VAS ZAHVALNI DUZNIK=

:NIKOLA TESLA.

POSTAL TELEGRAPH

104 W.5th Ave.  
Gary, Ind.  
Tel.2-2153

C38 30=HO New York,N.Y. 615P Nov 21 1940

M M Ducich 1100 Mass. Cloverleaf Dairy  
Residence Gary 81540 Gary,Ind.

FORGIVE ME, IT WASN'T POSSIBLE FOR ME TO RECOGNIZE YOUR GENEROUS HELP  
IMMEDIATELY.ST.NICHOLAS AND YOU ARE MY BEST FRIENDS.TO YOU AND TO YOUR  
FAMILY I WISH THE BEST SATISFACTION ON THE OCCASION OF TODAY'S HOLYDAY.

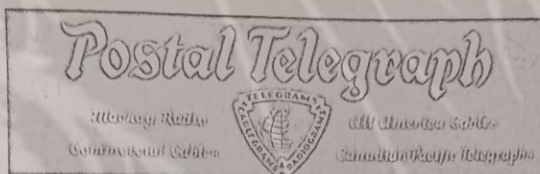
YOUR GRATEFUL DEBTOR,

NIKOLA TESLA.



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## CLASS OF SERVICE

This is a full-rate Telegram or Cablegram unless its deferred character is indicated by a suitable symbol above or preceding the address.

R. D. WHITE  
PRESIDENT

NEWCOMB CARLTON  
CHAIRMAN OF THE BOARD

J. C. WILLEVER  
FIRST VICE-PRESIDENT

# WESTERN UNION

1201

## SYMBOLS

DL=Day Letter  
NT=Overnight Telegram  
LC=Deferred Cable  
NLT=Cable Night Letter  
Ship Radiogram

(50)

The filing time shown in the date line on telegrams and day letters is STANDARD TIME at point of origin. Time of receipt is STANDARD TIME at point of destination.

1941 JAN 15 PM 3 55

C131 47=NH NEWYORK NY 15 412P

MIHAILO M DUCICH=

CLOVERLEAF DAIRY CO

DOBIO SAM SINOC STO DVADESET PET I JUTROS. CETIRI STOTINE  
PEDESET ZAHVALJUJEM VAM OD SVEG SRCA NA VASOJ PLEMENITOJ  
POMOCI CEKOVE CU SLATE CIM DOBYEM MOZEBITE BEZE NEGO SAM  
OCEKIVAO PER CU PRIMITI NOVACA SA DRUGE STRANE SELEC I VAM  
ZDRAVGE I SRETAM PUT OSTAJEM VAS VECITI DUZNIK=  
NIKOLA TESLA=

THE COMPANY WILL APPRECIATE SUGGESTIONS FROM ITS PATRONS CONCERNING SERVICE.

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to Fil

1 1941

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1 Le

WESTERN UNION

(50)

C131 47=NH New York N.Y. 15 412P

1941 JAN 15 PM 3 55

Mihajlo Ducich

Cloverleaf Dairy Co

one

dollars

LAST NIGHT I RECEIVED HUNDRED TWENTY FIVE, AND TODAY MORNING FOUR HUNDRED  
FIFTY. I THANK YOU FROM THE BOTTOM OF MY HEART, FOR YOUR GENEROUS HELP.  
I WILL SEND THE CHECKS AS SOON AS I RECEIVE, MAY BE FASTER THEN I EXPECTED,  
BECAUSE I WILL RECEIVE MONEY FROM OTHER SIDE TOO.  
WISHING YOU GOOD HEALTH AND SAFE TRIP I REMAIN YOUR ETERNAL DEBTOR.

NIKOLA TESLA.



10-11-40

10-11-40



HOTEL NEW YORKER

THIRTY-FOURTH STREET AT EIGHTH AVENUE, NEW YORK

October 11, 1940

Port

Enclosed is \$2.00 of which  
\$1.50 is intended for your  
service today. Leaving me  
credit for the agreed amount.

Yours very truly

W. T. T. T.



TESLA, Nikola, Amer  
sively with Thomas Edison

KENNETH W. RENDELL  
DIRECTOR

165 10-17-40



HOTEL NEW YORKER

THIRTY-FOURTH STREET AT EIGHTH AVENUE, NEW YORK

October 17, 1940

Carl:

Enclosed \$2.00 which, I under-  
stand, with the previous \$1.50  
will leave \$3.50 to my credit.

Very truly yours

N. Tesla

161



N. AHS 3-6-41.



**HOTEL NEW YORKER**

THIRTY-FOURTH STREET AT EIGHTH AVENUE, NEW YORK

March 5, 1941

Carl:

Enclosed \$ 39<sup>00</sup> as per phone

Thanks for your excellent  
service. I shall talk with  
you in regard to program for today

Very truly yours

A. T. T. T.



Stationery, New York  
The electrician of the rotating machinery, writes to Carl, in full credit, 50 cents will leave St. \$1,500-\$3,000

165<sup>80</sup>

12-31-40



**HOTEL NEW YORKER**  
THIRTY-FOURTH STREET AT EIGHTH AVENUE, NEW YORK

December 31, 1940

Carl

This is to wish you  
a Happy New Year

Yours sincerely  
A. Teala

413





**HOTEL NEW YORKER**  
THIRTY-FOURTH STREET AT EIGHTH AVENUE, NEW YORK

March 2, 1942

Carl:

I have thought that the total quantity of vegetables might be increased to  $1\frac{1}{2}$  ounces.

Furthermore, I have eliminated all doubtful items.

On this supposition I give the relative weights of the components and their protein values on the next page.



Total amount of vegetables		Protein value
112 ounces		$N \times 6.25$
Leeks (only the white)	2 ounces	0.80
Heart of cabbage	24 "	2.80
Carrots	8 "	0.60
Canliflower (only the flower)	12 "	1.80
Celery heart	8 "	0.65
White potato	8 "	1.00
Sweet potato	12 "	1.50
Spinach	12 "	1.73
Fresh tomato	8 "	0.60
White turnip	10 "	0.82
Lettuce heart	4 "	0.30
Tapioca	4 "	0.52

Total weight of vegetables 112 "

Protein 1312  
total

equal to about 13 eggs



(26)



THIRTY-FOURTH STREET AT EIGHTH AVENUE, NEW YORK

HOTEL NEW YORKER

RECEIVED (in NY) 10-31-42

OCTOBER 31<sup>st</sup> 1942

From Dr. Nikola Tesla Rooms 3327-28

Telephone Medaillon 3-1000

Delivered to

Enclosing \$5<sup>00</sup>

Part

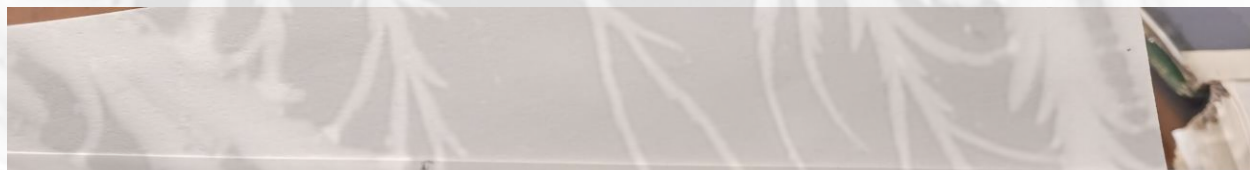
for all service

Sous-Chef

to-night

Main Kitchen Hotel New Yorker





He called at 12:15 - the  
first time at the hotel here  
NEW YORK UNIVERSITY  
PHONE CALL  
M Mr. Rado  
was called by Mrs. Sweeney  
whose number is EN 9-5509  
time 10 AM date 1/8, 1943  
Message he called to tell you  
Mr. Tessa called - please  
call Mr. Sweeney, Y.C.  
407-638-640

"called" should,  
in fact, read  
"died"



CLASS OF SERVICE

This is a full-rate Telegram or Cablegram unless its deferred character is indicated by a suitable symbol above or preceding the address.

# WESTERN UNION

1230

SYMBOLS

DL=Day Letter  
NT=Overnight Telegram  
LC=Deferred Cable  
NLT=Cable Night Letter  
Ship Radiogram

A. N. WILLIAMS  
PRESIDENT

NEWCOMB CARLTON  
CHAIRMAN OF THE BOARD

J. C. WILLEVER  
FIRST VICE-PRESIDENT

The filing time shown in the date line on telegrams and day letters is STANDARD TIME at point of origin. Time of receipt is STANDARD TIME at point of destination.

N11CC 9XA 96/95 NL 2 EXTRA

ZG NEWYORK NY JAN 9 1943

PROF PAUL RADOSAVLJEVICK

NEWYORK UNIVERSITY-NYK

IN VIEW OF NICOLA TESLA'S ENORMOUS CONTRIBUTIONS TO SCIENCE AND INDUSTRY YOU WILL UNDOUBTEDLY SHARE THE SENSE OF LOSS AND SYMPATHY THE WORLD MUST FEEL AT HIS PASSING. WILL YOU SERVE AS AN HONORARY PALLBEARER AT THE FUNERAL SERVICES TO BE HELD AT CATHEDRAL OF STJOHN THE DIVINE ON TUESDAY JANUARY 12 AT FOUR PM? WE TAKE THE LIBERTY OF SENDING THIS MESSAGE BEING RESPECTIVELY A FORMER COWORKER WITH TESLA AND A FELLOW EMIGRANT FROM YUGOSLAVIA. WILL YOU BE GOOD ENOUGH TO RESPOND TO THIS MESSAGE BEFORE NOON ON MONDAY AT PLAZA 8-0256

CHARLES F SCOTT YALE UNIVERSITY LOUIS ADAMIC

. 959P



CLASS OF SERVICE  
This is a full-rate Telegram or Cablegram unless an deferred character is indicated by a suitable symbol above or preceding the address.

# WESTERN UNION

NEWCOMB CARLTON  
CHAIRMAN OF THE BOARD  
J. C. WILLEVER  
FIRST VICE-PRESIDENT

1200  
SYMBOLS  
DL=Day Letter  
NL=Overnight Telegram  
LT=Cable Telegram  
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1200  
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N11CC 9XA 96/95 NL 2 EXTRA

2G NEWYORK NY JAN 9 1943

PROF PAUL RADOSAVLJEVICK  
NEWYORK UNIVERSITY NYK

IN VIEW OF NICOLA TESLA'S ENORMOUS CONTRIBUTIONS TO SCIENCE AND INDUSTRY  
YOU WILL UNDOUBTEDLY SHARE THE SENSE OF LOSS AND SYMPATHY THE WORLD MUST  
FEEL AT HIS PASSING. WILL YOU SERVE AS AN HONORARY PALLBEARER AT THE  
FUNERAL SERVICES TO BE HELD AT CATHEDRAL OF ST JOHN THE DIVINE ON  
TUESDAY JANUARY 12 AT FOUR PM? WE TAKE THE LIBERTY OF SENDING THIS  
MESSAGE BEING RESPECTIVELY A FORMER COWORKER WITH TESLA AND A FELLOW  
EMIGRANT FROM YUGOSLAVIA. WILL YOU BE GOOD ENOUGH TO RESPOND TO THIS  
MESSAGE BEFORE NOON ON MONDAY AT PLAZA 6-0256

CHARLES F SCOTT YALE UNIVERSITY LOUIS ADAMIC

. 959P



# CLASS OF SERVICE

This is a full-rate Telegram or Cablegram unless the desired character is indicated by a suitable symbol above or preceding the address.

A. N. WILLIAMS  
PRESIDENT

NEWCOMB CARLTON  
CHAIRMAN OF THE BOARD

J. C. WILLEVER  
FIRST VICE-PRESIDENT

# SYMBOLS

DL=Day Letter  
NY=Cable Telegram  
LC=Cable Letter  
NY=Cable Night Letter  
Ship Radiogram

# WESTERN UNION

120

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NYCC 9XA 96/95 NL 2 EXTRA

ZG NEWYORK NY JAN 9 1943

PROF PAUL RADOSAVLJEVICK  
NEWYORK UNIVERSITY NYK

IN VIEW OF NICOLA TESLA'S ENORMOUS CONTRIBUTIONS TO SCIENCE AND INDUSTRY YOU WILL UNDOUBTEDLY SHARE THE SENSE OF LOSS AND SYMPATHY THE WORLD MUST FEEL AT HIS PASSING. WILL YOU SERVE AS AN HONORARY PALLBEARER AT THE FUNERAL SERVICES TO BE HELD AT CATHEDRAL OF ST JOHN THE DIVINE ON TUESDAY JANUARY 12 AT FOUR PM? WE TAKE THE LIBERTY OF SENDING THIS MESSAGE BEING RESPECTIVELY A FORMER COWORKER WITH TESLA AND A FELLOW EMIGRANT FROM YUGOSLAVIA. WILL YOU BE GOOD ENOUGH TO RESPOND TO THIS MESSAGE BEFORE NOON ON MONDAY AT PLAZA 6-0256

CHARLES F SCOTT YALE UNIVERSITY LOUIS ADAMIC

959P



**N A I D**

Please do not disturb anything here  
or clean or dust. I attend to this  
myself. Fix bathtub and toilet and  
leave plenty of towels.



One of the many slips that Tesla continually placed around his hotel rooms.

Picked up by Kenneth Swezey upon entering Tesla's rooms at the Hotel New Yorker following his death.

Received from Swezey January 13, 1955.



N A I D

Please do not disturb anything here  
or clean or dust. I attend to this  
myself. Fix bathtub and toilet and  
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Received from Swezey January 13, 1955.



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# WESTERN UNION

A. N. WILLIAMS  
PRESIDENT

NEWCOMB CARLTON  
CHAIRMAN OF THE BOARD

J. C. WILKINSON  
FIRST VICE-PRESIDENT

1201

SYMBOLS  
DL = Day Letter  
NT = Overnight Telegram  
LC = Deferred Cable  
NLT = Cable Night Letter  
Ship Radiogram

The filing time shown in the date line on telegrams and day letters is STANDARD TIME at point of origin. Time of receipt is STANDARD TIME at point of destination

H205CC 3W 60/59

NEWYORK NY 805P JAN 11 1943

PROF. PAUL RADOSAVLJEVICH

NEWYORK UNIVERSITY NYK

THE CATHEDRAL OF ST JOHN THE DIVINE HAS ASKED ME TO LET YOU KNOW THAT AS AN HONORARY PALLBEARER WILL YOU BE KIND ENOUGH TO MEET WITH THE OTHERS INSIDE THE CENTRAL GATES FROM WHERE THE PROCESSION WILL PROCEED INTO THE CATHEDRAL WHERE SERVICES WILL BE HELD FOR NIKOLA TESLA. FOR FURTHER INFORMATION KINDLY CALL ME AT PLAZA 8-0256

RUTH R MAIER

820P

THE COMPANY WILL APPRECIATE SUGGESTIONS FROM ITS PATRONS CONCERNING ITS SERVICE



Yugoslav Govt. in Exile  
70 Dr. M. Stanoyevich  
745-5th Ave. N.Y. City

(Night) Jan. 12, 1942.  
Telegram

Being ill in bed I cannot have the honor to see once again the holy face of our Mr. Nikola Tesla. His death is a great loss not only to Serbs, Jugoslavs and Slavic people, but also to the whole world, especially our U.S. which he loved so dearly. He used to say, "We Serbs are proud to be citizens of the greatest <sup>and</sup> noblest country on earth, a country which realizes unity amidst diversity." ~~His~~ <sup>His</sup> ~~expression~~ He loved the heroic Karageorgievich's Serbia <sup>and</sup> brave Montenegro which gave their best blood to free <sup>and</sup> unite the Serbs, Croates & Slovenes from the yoke of Austro-Hungary. He ~~admired~~ <sup>admired</sup> Karageorgievich's Jugoslavia as it testified by his recent meeting with the young King Peter II. He admired Draga Mihajlovich as a symbol of the old Serbian struggle for the Holy <sup>Free and</sup> Golden Liberty. He loved heroic Russia as the mother of all Slavs, <sup>as well as</sup> Poland & Czechoslovakia and had nothing but <sup>with</sup> the fate of so called independent, Hitler's Croatia & Slovakia & Bulgaria. He is a symbol of our modern culture & civilization.

Dr. Paul R. Radosavich  
Prof. of New York University



(Composition of Telegram)  
(Night, Jan. 12, 1943)

Yugoslav Govern. in Exile

% Dr. M. Stanoyevich

745 - 5<sup>th</sup> Ave. N. Y. City

Being ill in bed I cannot have the honor to see once again the holy face of our Dr. Nikola Tesla. His death is a great loss not only to Serbs, Yugoslavs and Slavic people, but also to the whole world especially our U. S. which he loved so dearly. He used to say, "We Serbs are proud to be citizens of the greatest & noblest country on earth, a country which realizes unity amidst diversity," to use his own expression. He loved the heroic Karageorgevich's Serbia & brave Montenegro which gave their last blood to free & unite the Serbs, Croates & Slovanes from the yoke of Austro-Hungary. He admired ~~considered~~ Karageorgevich's Jugoslavia as is testified by his recent meeting with the young King Peter II. He admired Draza Mihajlovich as a symbol of <sup>(cross)</sup> the old Serbian struggle for the Holy X & Golden Liberty. He loved heroic Russia as the mother of all Slavdom, Poland & Czechoslovakia and had nothing but pity for the fate of so called independent, Hitler's Croatia & Slovakia & Bulgaria. He is a symbol of our modern culture & civilization.

Dr. Paul R. Radosavljevič

Prof. at New York University









National Home Offices  
CROATIAN FRATERNAL UNION  
Pittsburgh, Pennsylvania

# ZAJEDNICAR

## — ENGLISH SECTION —

Established November 6, 1929. Published weekly  
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WEDNESDAY, OCTOBER 26, 1960

### Adam Sudetic

THE PASSING Oct. 10, 1960, in Detroit of Adam Sudetic marked the end of an era in the annals of the English Section of the Society's Official Organ.

Gone is the man who was to enrich these pages the past five years by contributing a historic series of articles dealing with the lives and works of Nikola Tesla, he of immortal fame in the scientific world, and Vlaho Bukovac, the greatest Croatian artist of all time.

In submitting his articles for publication in the English Section, bro. Sudetic was always wont to "apologize" for his loose usage of the English language, a habit he attributed to the fact that he was a "self-educated American."

But his vast knowledge of such men as Tesla and Bukovac — he was an authority on both of them — far overshadowed his constant battle with the English language.

As it was, bro. Sudetic had nothing to apologize for in the end.

★ ★ ★



To Heland J. Anderson  
from Quoris Rivotolo  
NY Lett. 18-56 -





1 3 5 7 9 11 13 15  
 2 4 6 8 10 12 14 16  
 17 18 19 20 21 22 23 24

1	24	7	18
23	5	11	16
4	6	12	13
10	19	21	3
11	18	20	9

S A T O R  
 A R E P O  
 T E N E T  
 O P E R A  
 R O T A S



Snug & now was I see I now was + guns

Roma the white to not to be still as 1000

Nadler  
Doc

Correspondence to be  
 at the original, original, original  
 DODD SYSTEM OF LIVING PROJECTS  
 420-22 Sixth Avenue, Dec Moines, IOWA





One of Nikola Tesla's  
gummed seals illustrating an oscillator of  
his invention designed  
for the production of  
ozone.

AUTOGRAPH MANUSCRIPTS  
of  
Nikola Tesla

Vol. I

NEGATIVE PHOTOSTAT ITEMS IN THESE  
VOLUMES ARE FROM THE COLLECTION  
OF LILLIAN MCCHESENEY, BALDWIN, L.I.





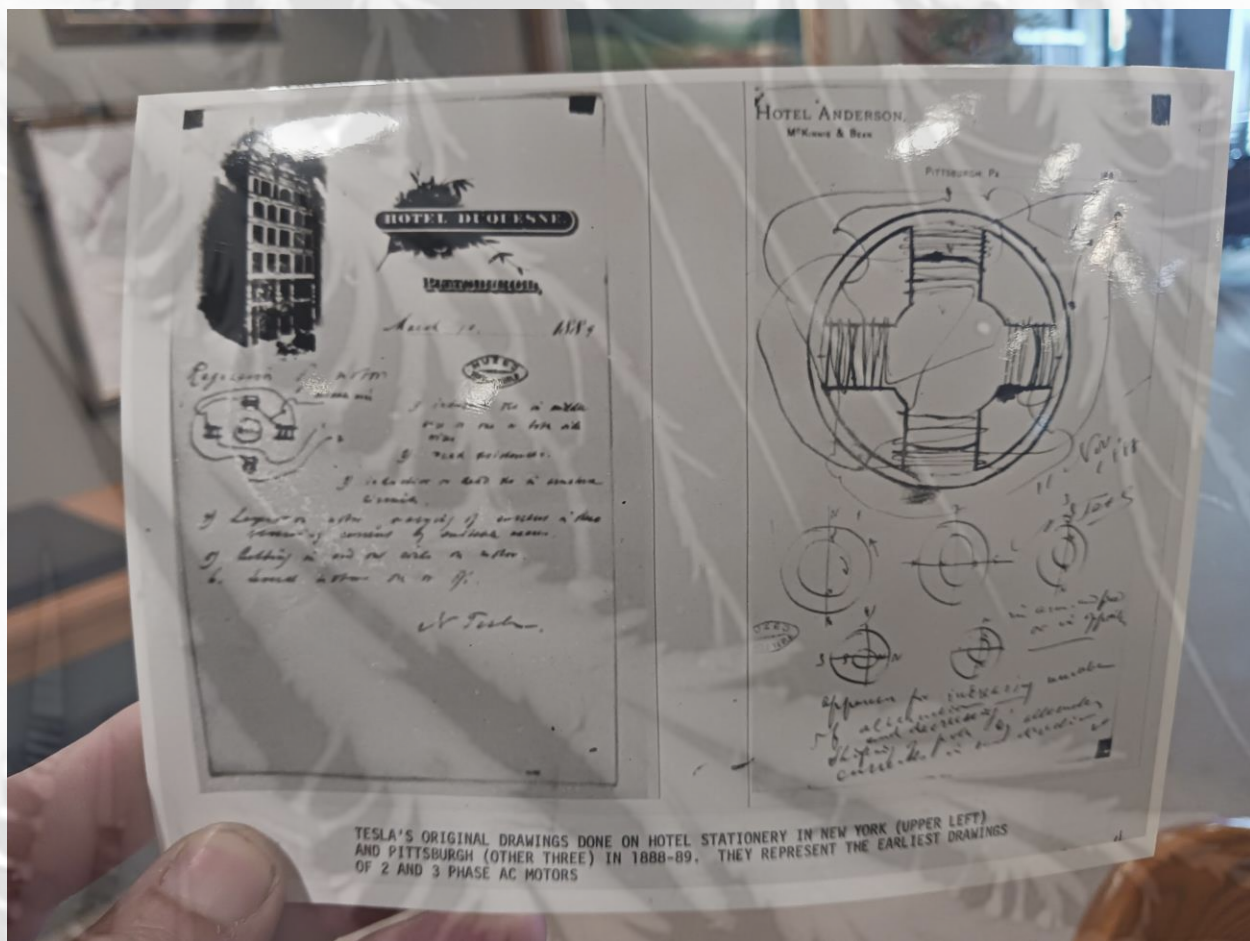


One of Nikola Tesla's  
gummed seals illustrating  
an oscillator of  
his invention designed  
for the production of  
ozone.

















F. T. KEITH, MANAGER.

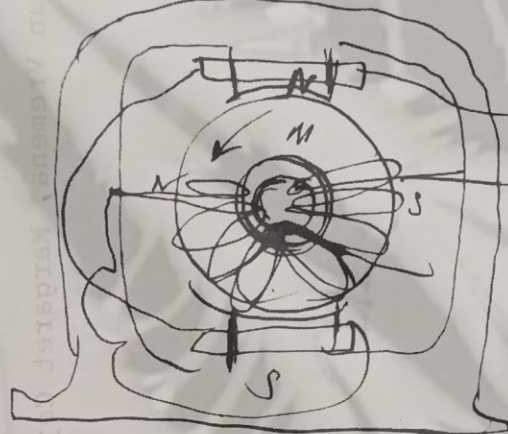


BROADWAY  
BARCLAY  
& VESEY  
STB. P.



Alk. i. ...

Feb. 2 1891



Terminals  
Source of  
current

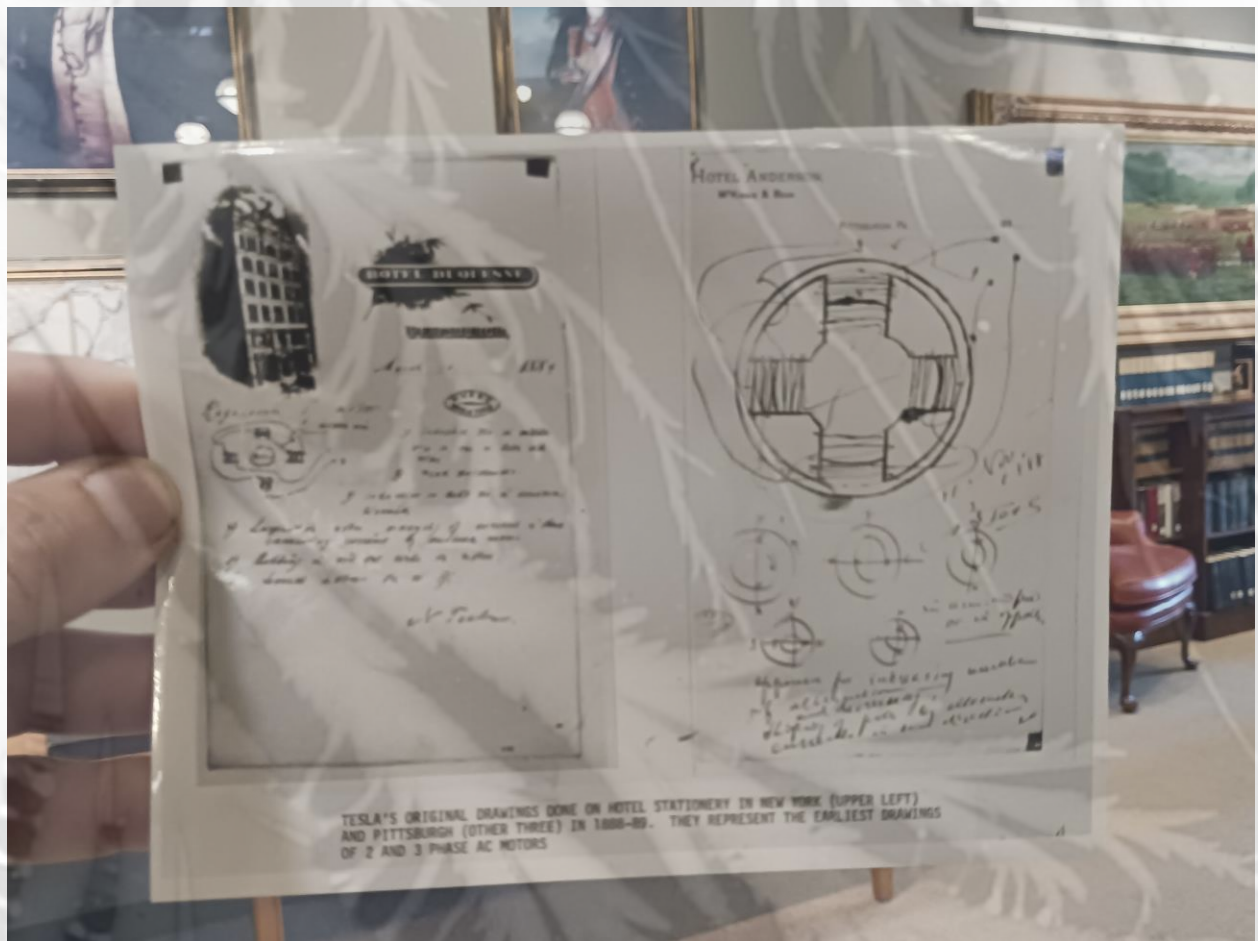
M laminated core covered say with  
copper and around to freely rotate  
upon a shaft which is hollow and  
through which primary <sup>coil's</sup> are wound.  
Then both primary and secondary are connected  
to current free poles upon. These free  
poles act upon the poles of the field.

is Tesla

Still open as primary armature is ...  
or ...

Teslin crtež i opis motora na naizmeničnu struju na listu hotela Astor haus iz 1890. godine.



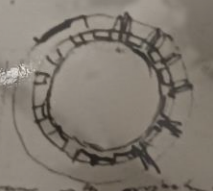
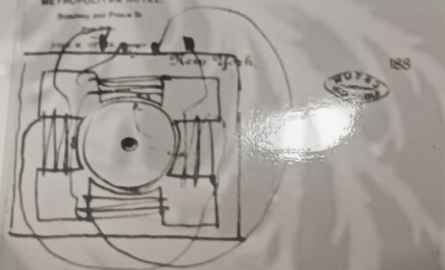


TESLA'S ORIGINAL DRAWINGS DONE ON HOTEL STATIONERY IN NEW YORK (UPPER LEFT) AND PITTSBURGH (OTHER THREE) IN 1888-89. THEY REPRESENT THE EARLIEST DRAWINGS OF 2 AND 3 PHASE AC MOTORS



UPPER LEFT

METROPOLITAN HOTEL  
Broadway and Prince St.



gone with original  
drawings, plans, etc.

UPPER RIGHT

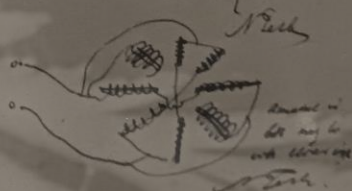


HOTEL DUQUESNE

12th Street



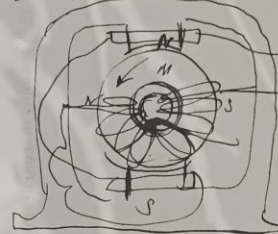
me and me, we, we go' apart  
and we and we are  
me, me and we







Alk. electric motor



MUSEUM

A laminated core encased say with  
copper and around, to freely rotate  
upon a shaft which is driven and  
through which primary wire runs.  
then both primary and secondary are connected  
by means of free poles. These free  
poles act upon the poles of the field.

W. T. Allen

Feb 2 1891 at primary terminals in series  
or multiple use. C. I. P.

Teslin crtež i opis motora na naizmeničnu struju na listu hotela Astor haus  
iz 1890. godine.



H. R. GARDEN,  
COUNSELLOR AT LAW,  
ROOM 508,  
MUTUAL LIFE BUILDING,  
NASSAU, CEDAR & LIBERTY STS.

*New York,* May 21st, 1888.

George Westinghouse, Jr., Esq.

Pittsburg, Pa.

My dear Mr Westinghouse:

As per appointment, I called upon Mr Brown this morning, and found that he, and a party by the name of Peck (whom I imagine to be a lawyer) are the owners of the Tesla patents pertaining to motors. Under a separate cover and by special delivery stamp, I send you copies of these seven patents, together with a copy of the report by Prof. Anthony on the apparatus, which, it is claimed, is covered by the patents in question.

Being in a great hurry, I am dictating this letter to you through Capt. Garden's stenographer, as I have not time to write it myself, legibly.

Brown and Peck took me to a place on Liberty street, where I was introduced to Mr Tesla, Mr Humbard being in company with ~~him~~ <sup>the</sup> ~~him~~, and I was shown a great mass of apparatus, <sup>among which</sup> ~~consisting~~ <sup>were</sup> of five or six motors. Mr Tesla struck me as being a straightforward, enthusiastic, sort of a party; <sup>but</sup> ~~his~~ his description was not of a nature which I was enabled, entirely, to comprehend. However, I saw several points which I think are of interest. In



H. R. GARDEN,  
COUNSELLOR AT LAW,  
ROOM 808,  
MUTUAL LIFE BUILDING,  
NASSAU, CEDAR & LIBERTY STS.

*New York,*

the first place, as near as I can get at it, the underlying principle of this motor is the principle which Mr Shøllenberger<sup>a</sup> is at work on at the present moment. The motors, as far as I could judge from the examination which I was enabled to make, are a success. They start from rest and the reversion of the direction of rotation <sup>Can be accomplished</sup> ~~is~~ suddenly without any short-circuiting. They were small affairs, and were claimed to develop in the neighborhood of a half a horse power. They were very neat in workmanship and in appearance. Among the other matters which Mr Tesla showed me, was a little disc, mounted almost identically as Mr Shøllenberger's first experimental disc was mounted, ~~in~~<sup>of</sup> which Tesla showed would commence rotating so soon as it was brought in the neighborhood of a circuit through which an alternating current was flowing, and also that its direction of rotation would reverse according as its position with relation to the wire through which the current was flowing was changed. Another device which he had in operation in order to show the principle of his motor, consisted of a disc of sheet iron mounted on a shaft, which shaft ran in journals and around the outer edge of the disc was a stationary annular ring of laminated iron wound with wire similarly to the armature of a Gramme machine. When a current was sent



H. R. GARDEN,  
COUNSELLOR AT LAW,  
ROOM 608,  
MUTUAL LIFE BUILDING,  
NASSAU, CEDAR & LIBERTY STS.

3

*New York,*

through the wire the sheet iron disc would start rotating and soon attain a prodigious speed. Mr Tesla explained that in the practical operation of his motors, he preferred to use three wires all carrying alternating currents, two of the wires being connections from the wires, either primary or secondary, of an ordinary alternating circuit, while the third would be a wire carried directly from a sort of secondary winding applied to the armature of the machine. In order to avoid giving the impression that the matter was one which excited my curiosity, I made my visit short and after leaving the room in which the apparatus was working, took Brown and Peck to 17 Cortlandt street, where they stated that after having heard nothing from us for some three weeks after first communicating with Duncan, whom they supposed was our representative, they had carried on negotiations with certain strong capitalists represented by Mr Butterworth, of San Francisco, and whom I ascertained was the same party who last spring negotiated with us for use of our system and the fuel gas in San Francisco. Brown and Peck expressed a desire to deal with us, if possible, but say that unless we can let them know by ten o'clock, Friday of this week, whether or not we propose, seriously,



*New York,*

looking into the matter, they will accept Butterworth's proposition, which they told me was a payment in short-term notes of about Two Hundred Thousand Dollars, and a royalty of \$2.50 per H. P. The terms, of course, are monstrous; and I so told them; and they replied that they could not possibly hold the matter over longer than the date mentioned. I told them I thought there was no possibility of our considering the matter seriously, but that I would let them know before Friday. I would suggest that if you are unable to come here yourself, that Mr Kerr and Mr Shellenberger come on Tuesday night. Please advise me by telegraph on receipt of this. They allege that Prof. Anthony has now joined the syndicate represented by Butterworth, and who proposed paying the enormous figure mentioned for the patent.

I have important matters to look after to-morrow, or otherwise would have come home to-night.

Very respectfully yours,

*W. R. Gibson*



Westinghouse  
Electric Corporation



Westinghouse Building  
Gateway Center  
Pittsburgh Pennsylvania 15222

April 8, 1983

Dear Leland:

It was good to hear from you and have your reminder that I had neglected to send you the Byllesby letter. On resurrecting it, I find I misled you as to the word "preposterous." As you will note, the word was "monstrous." The underscoring, by the way, is not mine.

Looking at the letter now, I feel certain that if I were to ask anyone in our management hierarchy if it is all right to send you a copy of the letter, I'm sure the answer would be "no," particularly if a lawyer were involved. But I'm taking the chance on sending this to you for framing (a fairly big frame), with the understanding that it is not for publication. Should anyone visiting your study start making notes from the letter, you had better have them get in touch with me before thinking of publication.

The thing we have to remember is that the \$2.50 figure is only in a memorandum of agreement; the only signed agreement makes no reference to the royalty. So much for that.

It's interesting that you mention IEEE's 100th. As a matter of fact, I will be in Orlando Monday (April 11) speaking to the Southeastcon '83, on the subject of the Westinghouse Centennial. As part of the conference they are having a session on Electrical Engineering History.

All the best!

*Charlie Ruck*

P.S. Thanks for the congratulations on my 45th anniversary. As it happens, I will be in Orlando on the day I began, 45 years ago.



Matchbook # 28

capital, for all the Baar would be a dividend & leave them still in debt to me 60 or 70,000. #

2. Reserve Sheri but sell evrything else to them for 6% on capital & a share of possible profit. They assuming my responsibilities & my slavery to a lunatic. #

3. Wait until this other matter determines itself successfully; then collect what comes in from Sher, make my capital intact, let the old regime return Apl. 1 & go unassisted to destruction. #

I prefer No. 3. #

1. [If by Dec. 31] Sher proves to be unprofitable, demand a ref construction of contract placing power in my hands where it belongs. Refusal? Go into court. #

2. Demand dissolution. Go into Court. #

Can I be held for debts made beyond the capital? #

I will buy out or sell out. #

Since the spring of '86, the thing has gone straight down hill toward sure destruction. It must be brought to an end Feb. 1 at all hazards. This is final. #

Nov. 1, 1888. I have just seen the drawings & description of an electrical machine lately patented by a Mr. <sup># <Tesla></sup> Tesla, & sold to the Westinghouse Company, which will revolutionize the whole electric business of the world. It is the <sup>most</sup> ~~last~~ valuable patent since the telephone. The drawings & description show that this is the very machine, in every detail which Paige invented nearly 4 years ago. I



furnished \$1,000 for the experiments, & was to have half of the invention. We tried a direct current -- & failed. We wanted to try an alternating current, but we lacked the apparatus. The \$1000 was exhausted, & I would furnish nothing more because I was burdened in the 3 succeeding years with vast expenses on the Paige typesetting machine. <sup>Tesla</sup> Tesla (& Thompson?) tried everything that we tried, as the drawings & descriptions prove; & he tried one thing more -- a thing which we had canvassed -- the alternating current. That solved the difficulty & achieved success.

Clarence must give market report -- American heiresses buying up rotten dukes. Character as well as title considered in the market, & discounted accordingly.

Who the duke married first -- next -- & so on -- causes of divorce. Disease -- but can't name it.

Buy hearts counters

(Jerusalem) "Well, the Savior's been here once!"

To start with, 5 m. -- no orders. 1 m sh at 5 each 5000,000.

Each 1000<sup>th</sup> is worth \$5. After 500 orders, \$10 -- after 1000 15 after

10,000 500 Ich werde Ihnen  $\frac{1}{500}$  von dem Ganzen um \$10,000 verkaufen  
1000 000 (basis, \$5,000,000.

Mach 1000 Orders 500 Bestellen, um  $\frac{1}{500}$  15,000. (Grund, 10,000,000.

Mach 1000, um \$20,000. (Gr. 15,000,000)

" 1500 " 25,000 ( " 20,000,000

" 2000 " 30,000 ( " 25,000,000

OVER

Written at right angles over preceding paragraph.

Mike -

do 'd

do 'd

Do us

to using

writing

Galley

Phil

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added 12

see 124

to Table

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124

124

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which is

man

is 'D

right?

Mike -

No. 1

the

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with

line

to

Botanic

Geriatric

not quite

see note

correct



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BERKELEY, CALIFORNIA 94720

22 September 1975

Dear Mr. Anderson:

It was indeed kind of you to write about the Clemens letters to Tesla--as it happens we had already photographed these, but we might well have missed them so I am grateful for the information you sent. I have checked our files to see if we had any letters from Tesla to Mark Twain, but I can find no record that there are any. If I can be of any assistance to you in any work that you are doing on Tesla, I hope you will let me know. We do have a very few references to Tesla in Mark Twain's notebooks (and perhaps in other places), but the only one that I can find at the moment is 1 November 1888. I am sending you a copy of the typescript copy of the note in the context of other entries of the period. This notebook will appear in volume III of Mark Twain's Notebooks & Journals which we are now editing for publication by the University of California Press.

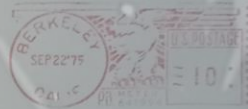
Sincerely yours,

Frederick Anderson  
Editor - Mark Twain Papers



480

THE GENERAL LIBRARY  
UNIVERSITY OF CALIFORNIA  
BERKELEY, CALIFORNIA 94720

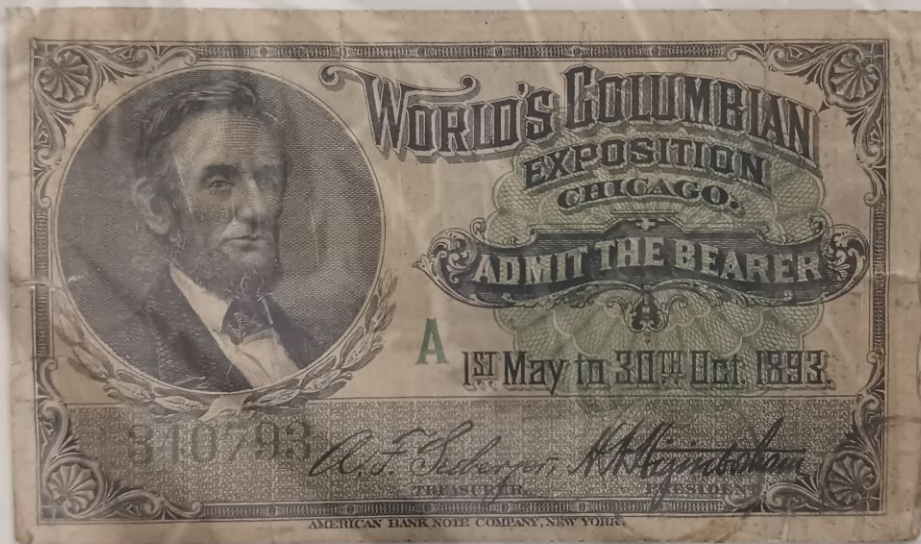


Mr. Leland I. Anderson  
1415 Vine Street  
Denver, Colorado

80206

apt. 2























Denver



COLUMBIAN EXPOSITION 1893

BIRDSEYE VIEW OF GROUNDS AND BUILDINGS



of July 11.  
identity of "Fodor  
tojanovic of Belgrade,  
21, 1854. The accession  
man, but I





THE LIBRARY OF CONGRESS  
WASHINGTON, D.C. 20540

MANUSCRIPT DIVISION

August 12, 1987

Dear Mr. Anderson:

This is in reply to your letter of July 17.

I regret that we do not know the identity of "Fodor." The letters to him were part of a gift of Mr. Spasoje Stojanovic of Belgrade, Yugoslavia, and were received in the Library on January 21, 1954. The accession record mentions that Fodor was translating Tesla's lectures into German, but I expect that information was taken from one of the letters.

You have photocopies of all of the Tesla letters known by me to be in our collections, but of course there may be others which I have not noticed. Your photocopies are enclosed.

Yours sincerely,

*Ronald S. Wilkinson*

Ronald S. Wilkinson  
Manuscript Historian

Enclosure

Mr. Leland I. Anderson  
2525 South Meade Street  
Denver, CO 80219



THE LIBRARY OF CONGRESS  
MANUSCRIPT DIVISION  
WASHINGTON, D. C. 20540

OFFICIAL BUSINESS  
PENALTY FOR PRIVATE USE, \$300  
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1987  
THE YEAR  
OF THE READER

Mr. Leland I. Anderson  
2525 South Meade Street  
Denver, CO 80219



20

... letters  
... dor.

2525 South Meade Street  
Denver, Colorado 80219

July 17, 1987

... manuscripts

... has four letters in its collection  
... (attached). I am anxious to learn the  
... /9/92 letter, it's possible that  
... f Tesla's lectures into German.  
... found that Fodor is published.  
... mentions sending Fodor a cable (to  
... Perhaps the provenance of these  
... as to the identification of  
... information that you might be able

... (at least 15!) since I queried  
... dings of Tesla manuscripts. I

... (attached)

... exchange of 15 letters from

... ers of 9/29/15, 10/8/15, and

... 8/28/01, 8/30/01, and 9/13/01).

... dings than these (excluding the  
... ears ago from the Muzej Nikole  
... e advised of them.

Sincerely,

*Leland I. Anderson*

Leland I. Anderson



2525 South Meade Street  
Denver, Colorado 80219

July 17, 1987

Dr. Ronald Wilkinson  
Manuscripts Division  
Library of Congress  
Washington, D.C. 20540

Dear Dr. Wilkinson:

Subject: Nikola Tesla manuscripts

The Manuscripts Division has four letters in its collection from Tesla to Fodor (copies attached). I am anxious to learn the identity of Fodor. From the 9/9/92 letter, it's possible that Fodor served as a translator of Tesla's lectures into German. From the 11/27/92 letter, it's found that Fodor is published. From the 1/1/93 letter, Tesla mentions sending Fodor a cable (to England or Europe obviously). Perhaps the provenance of these letters might provide some clue as to the identification of Fodor. I would appreciate any information that you might be able to provide.

It's been a number of years (at least 15!) since I queried the Manuscripts Division on holdings of Tesla manuscripts. I have copies of the following:

Fodor (four letters as attached)  
John Hayes Hammond, Jr. (exchange of 15 letters from  
10/13/10 to 2/19/14)  
Benjamin F. Miessner (letters of 9/29/15, 10/8/15, and  
11/8/15)  
Stanford White (letters of 8/28/01, 8/30/01, and 9/13/01).

If there are any additional holdings than these (excluding the microfilm rolls received some years ago from the Muzej Nikole Tesle), I would be pleased to be advised of them.

Sincerely,

*Leland I. Anderson*  
Leland I. Anderson

Attachments: Copies of four L/C letters  
from Tesla to Fodor.



New York March 19. 1893.

My dear Father



I have received both your letters of Jan. and Feb. I would have written to you before this, but every moment of my time was taken up and besides, my health has not been satisfactory. I am now preparing my lecture on *Cytoplasmic waves*, of which I shall send you a copy just as soon as it is ready. I shall also send the *Spallan* Collection of your book (which I have not received as yet) as soon as possible.

Yours sincerely

N Tesla.





New York Jan 1 1893

My dear Edison



I was sorry about the long delay in forwarding to you the manuscript. A few days after it was mailed, I believe, I cabled to you and trust that you have received my dispatch. I also hope that no material disadvantage has resulted from the delay. With to-day's mail I send you a copy of my abstract which has just appeared in the "Proceedings" of the Royal Institution. It may give you a better insight into some ideas which I have advanced.

Yours sincerely  
N Tesla.





New York, Nov 27 1892

My dear Fodor,



Your letter of 12 inst. and  
manuscript has received in due  
course.

I shall return the letter  
as soon as possible.

Thanking you for your friendly  
interest and good opinion and  
hoping that your book will  
meet with a success such, as  
will partially repay you for  
the pains taken, I remain

Yours sincerely  
W. T. Wells.





New York Sept. 9 1892

My dear Doctor



It is only now on my return from abroad that your favor of April 28th has come to my hands. I can not well believe I have received a letter from you before this, as you infer, I certainly would have answered it.

Of course I am pleased to learn that you have thought it worth while to translate my lecture in German, I am convinced that the translation will be a good one. If I can aid you in any way I shall do so with pleasure.

Yours sincerely

Nikola Tesla

I send copy of my  
London lecture with some  
notes.





My dear Doctor



It is only now on my return from abroad that your fav. of April 28. has come to my hand. I can not recall to have received a letter from you before this, as you infer, I certainly would have answered it.

Of course I am pleased to learn that you have thought it worth while to translate my lecture in German, I am convinced that the translation will be a good one. If I can aid you in any way I shall do so with pleasure.

Yours sincerely  
N. A. Tesla

I send copy of my  
London lecture with same  
hall.



New York March 19. 1893.

My dear Edison



I have received both your letters of Jan. and Feb. I would have written to you before this, but every moment of my time was taken up and besides, my health has not been satisfactory. I am now preparing my lecture on light phenomena, of which I shall send you a copy just as soon as it is ready. I shall also send the ~~paper~~ collector of your book (which I have not received as yet) as soon as possible.

Yours sincerely

N. Tesla.

GIFT OF MR. SPASOJE STOJANOVIC  
of BEOGRAD, JAN. 21, 1954





New York Jan 1 1893

My dear Doctor



I was sorry about the long delay in forwarding to you the manuscript. A few days after it was mailed, I believe, I cabled to you and trust that you have received my dispatch. I also hope that no material disadvantage has resulted from the delay. With to-day's mail I send you a copy of my abstract which has just appeared in the "Proceedings" of the Royal Institution. It may give you a better insight into some ideas which I have advanced.

Yours sincerely  
A. T. A.





New York, Nov 27 1892

My dear Fodor,

Your letter of 12 inst. and  
manuscript was received in due  
course.

I shall return the letter  
as soon as possible.

Thanking you for your friendly  
interest and good opinion, and  
hoping that your book will  
meet with a success such, as  
will partially repay you for  
the pains taken, I remain

Yours sincerely  
H. Tesla.



Njegovan, Vladimir. NIKOLA TESLA - HEROJ TEHNIKE  
Prosvjeta, Zagreb, 1950. Pp. 54.

New York, Nov 11, 1895

Page 29:

(Narrative previously, p.26, says that Tesla, after his lectures in London and Paris, visited Gospić to see his ailing mother, who died in his arms.)

This letter (Gospić), April 21, 1892, "in black border" is a reply to one received from one of the mother's brothers. It expresses his grief, despite the fact that he foresaw his mother's death, for, considering her general vigor, he hoped she would still live long. -- He is sorry they could not meet 2 years ago when he had come to Slavonia, and will inform him when such a meeting can be arranged.

He expresses regrets at the uncle's departure. He (Tesla) had given him advice beforehand. He hurriedly, (New York.)

\*

Page 29: To Col. Pajo Mandić (care of Hon. Pero Lupa, Esq.) Pomas, Budapest,  
Hungary, Europe.

P.S.: To Mr. Nikola Tesla, D. Gospić, Croatia, (New York)

Written at The Gerlach, Strictly Fire Proof Family Hotel, 27th St.  
between Broadway and 6th Ave., N.Y. N.Y. Oct.20,1895.

(First paragraph: account on occasion of letters between them.)

Dear Uncle: graphy says that his system of machinery illuminated the Exposition. His inventions received the most interesting reactions there; and, as he had (Was glad to hear of his uncle's retirement; would have been happy for him to have visited the Chicago Exposition, but "Uncle Peter" had given good advice about the uncertainty of the transportation because of daily train accidents; and again a financial panic such as America had not seen. Things look better now but it will take 2 or 3 more days before the heavy wounds suffered by industry are healed. He has much he could report. At the request of many scientists he lectured before the Science Congress at which he showed the inventions he was currently working on. These are new steam and electric machines, from which he expected great successes. The same is true of his motors, which, because of the bankruptcy of a certain company and poor financial standing, were put to small use; now they are in use and the prospect is very good. If it succeeds, then his invention will be used there. It appears that his system of machinery could be used in the transfer of power at Niagara. In the main, it looks as though some of his ideas will be used in this gigantic project. Were this to happen, he would earn much money; he is not thinking of this, but he would like to help his relatives. It appears to him that he has achieved greater fame than anyone else in his profession; he has received one honor after another, and this encourages him and spurs him on. He envisages that if he could develop only one (thing) practical, the entire world would be affected. -- His health is good. Most of all one misses good wine. He would like to pay well if he could get it in small bottles, since large bottles are inconvenient; he doesn't drink much. "Quality and not quantity."

Regards to family -- good wishes. Your nephew, Nikola.)

\*\*\*



Page two - Nikola Tesla letters

Address: unknown

Letterhead on the paper, as above.

New York, Nov 11, 1893

From: Tim Garton (as above) N.Y., Jan 17, 1894

Dear Uncle:

(He writes only briefly and hurriedly, being greatly occupied by a task. But, God willing, he hopes to see him in a few months. Now he has just completed a new invention over which he is elated. The success is wonderful in every way except monetary. But this is bound to come. If he had enough money to be independent, he could acquire a large possession. In the present situation that he finds himself he will have to take what he gets.)

(There are references to Sime, or Milan, and apparently some ill health where Sime is concerned. He expresses regrets at the uncle's discontent. He (Tesla) had given him advice beforehand. Hurriedly, Your Nikola.)

P.S.: To Rt. Rev. Nikola Mandić, Metropolitan, D. Gzla, Bosnia, Austro Hung., Europe.

(From Nikola Tesla, 35 South Fifth Avenue, New York, Dec. 8, 1893.

(First paragraph: comment on exchange of letters between them.)

(Second paragraph: Says that his system of machinery illuminated the Exposition; his inventions received the most interesting reactions there; and, as he had stated, his system was being used at Niagara. These are: a new system of steam power machinery for the conduction of electricity. His lecture created an indescribable impression. It would be difficult to convey how esteemed he was in the scientific world today. He has received many letters from the highest men (in the field) recommending that he modify (perhaps, lessen) his work. For there are plenty of scholarly (?) people but a small number of those with ideas. This, instead of diverting him from work, creates further enthusiasm. He expresses his feelings on the day he received an autographed photograph, "From Edison to Tesla.")

(He is working night and day on something that he feels will be of inestimable value to mankind, but he is afraid his powers will fade before he finishes it; this is something difficult for him to explain. (It is rather vague as to which part of his statement he is referring here. M.M.)

(A book is being published, describing his collected works. This was assembled by one of the leading writers in the technical field. The book is dedicated to his countryman. The uncle will receive a copy, but, unfortunately, it is in English.)

(Family greetings and congratulations "on your success." Your nephew, Nikola.)

(Greetings from Your Nikola.)



Page three - Nikola Tesla letters

P.33: Address: Unknown, to whom nothing was given.

From: The Gerlach (as above) N.Y., Jan.23, 1894.

Dear Uncle:

(He comments upon not having time to write, then states that the wine presumably sent to the uncle - which he is awaiting as "the Jews (await) the Messiah" has not reached him yet.)

(He has much news. His system is being used at Niagara. His new invention, called "oscillator" is progressing splendidly and the entire outlook is good. As concerning the "machinery", ie, the physical health: it is not exactly Miloš's, but it could be worse. (This allusion is undoubtedly alluding to the health of a friend or family member).)

(He hopes that the influenza has not been harmful. The Americans do not worry about such things as the influenza. They take a large glass of whiskey, dissolve from 10 to 20 grams of quinine in it, then go to bed, sleep, and in the morning they are as well as a steel ingot. Try this and you will see you will not have influenza.)

(Does not have time to write to Maria.)

(He has sent the book describing his works. He has sent a copy to every sister and uncle. The book is enjoying success and is in the second edition.)

(He is hoping to see them on a business trip to Europe. All his doctors and friends are advising him to stop working, but this is difficult for him until his work is finished.)

\*\*\*

P.34: To Hon. Colonel Paul Mandić (k.k. Oberst)  
Varasdin Hungary Europe

from: The Gerlach (as above)  
New York, April 13, 1894

Dear Uncle:

(Writes briefly, only to inform that there is still no wine, so that all the bottles sent by him - i. e., this Uncle - and those sent by Uncle Trivun must have broken. - Do not send me Dalmatian (wine) in the small barrels; I have experimented with this and it does not go. The only way would be to send Magyar wine in bottles. - Not long ago he got a gold medal from Franklin Institute for his accomplishments; some university has offered him a Doctor of Philosophy degree. He knows this will interest him. Everything looks fine now. He is progressing well with some invention and he hopes to finish it soon so that he can take a rest.)

(Greetings from Your Nikola.)



P. 34. Address of person to whom writing not given.

New York, May 17, 1894

Dear Uncle:

(He is answering to his and Maria's letters hurriedly, for time is precious.)

(Don't worry about the wine. - He got hold of something similar, - some French brand, not as good, but it could be worse.)

(He intends to go there soon, and it would please him if the Uncle were in Pomaz so that he could visit him.)

(He will send the Peri book (Perry?) some day, and is sending an issue of the large magazine, Century, which has some translations of Zmaj's poetry. - By this success I judge that Serbia profited more by these articles than from my work in the field of electricity. (I am not clear whether this means that he translated the poems, for he uses "article" in the second part of the sentence. M.M.)

(He is progressing well, and one new machine for illumination is now in readiness. He hopes for much success when this will be put into operation.)

(Family greetings. - "I would write to Maria, but I cannot bring myself to enter into correspondence with ladies.") Your Nikola.

\* \* \*

P.35. On May 13, 1895, there was a big fire in Tesla's laboratory in New York, which destroyed not only all his apparatus but everything that was of historical and of similar interest for Tesla's work. This fire caused tremendous and irreparable loss to Tesla. Only his unusual nature enabled him to survive it. In an interview to the Electrical Review, Tesla said:

"Everything is lost, not only what had importance for new works; more, and all that had personal value."

The Sun wrote:

"The downfall of Tesla's laboratory in New York is a misfortune for the whole world. It is not an exaggeration to say that there is not a more important person for mankind today than this young man."

This and similar expressions gave Tesla the moral support to begin the construction of a new laboratory, which began functioning in 1896.

(Abstracts of letters and translation by Mary Molek, Immigrant Archives, June, 1965)





New York, Jan 26 1894  
My dear Mr. Johnson,  
From the samples  
you اخیر showed  
to me today I think  
that we can obtain  
excellent photos. The  
expensive scheme of  
combining with the photo-  
chroment light and fire  
will no doubt succeed.



June 26

1894

I have seen some  
defects in the method  
we have employed last  
time and think that the  
next time we shall  
do better. I shall  
arrange for an other  
trial, but I think  
that we must perform  
a few more experiments  
before we come to a  
definite result, such  
as would be a credit  
to your magazine and  
to your artists. You  
must please give us  
all the time you can.  
Yours sincerely  
W. F. Fiske.



FROM  
NIKOLA TESLA,  
35 SOUTH FIFTH AVENUE.

1894  
New York. Feb 5 1894

My dear Mr. Johnson,

Your kind note received.  
I have no more a will of my  
own and so I shall be there  
to-morrow evening. But it shall  
be *habis voir* quand même - that is -  
*habis voir*  
*de laboratoire!*

Sincerely yours

N Tesla



COLUMBIA COLLEGE  
IN THE CITY OF NEW YORK

PRESIDENT'S ROOM

Feb. 5th, 1894.

To the Trustees:

I take pleasure in suggesting for the honorary degree of LL.D., Mr. Nicola Tesla of this city. In this connection I transcribe an extract from a letter from Prof. Osborn, bearing upon this subject as well as upon my earlier suggestion that the honorary degree should be conferred upon Mr. G. W. Hill.

Respectfully,

*John L. L.*

President.

Extract from Prof. Osborn's letter.

"I have especially upon my mind two matters which I think will appeal to you very strongly. The first is connected with Mr. Hill of Nyack, and the second with Mr. Tesla of New York. I have learned recently that Mr. Hill is considered the leading Mathematician in this country, and there seems to be little doubt that Mr. Tesla is the leading Electrician. They both are in a measure connected with Columbia through Mr. Hill's lectures here, and through the fact that Mr. Tesla at Professor Pupin's and Professor Crocker's invitation gave his first electrical lecture in Columbia. So that



we have already established a sympathetic relation with these great men. I spent an afternoon recently with Tesla, and regard him as one of the most distinguished men I have ever met. I happened to meet Professor Crocker shortly afterwards, and learned from him that he had spoken to you in regard to giving Tesla an Honorary Degree. I would like to support this in the most earnest manner. Poulton tells me that Tesla was covered with honors while in England and France. We certainly must not allow any other University to anticipate us in honoring a man who lives under our very walls."

\* Prof. of Biology at Oxford.



EDITORIAL DEPARTMENT  
THE CENTURY MAGAZINE  
UNION SQUARE NEW YORK

R. W. GILDER, EDITOR.  
R. U. JOHNSON,  
ASSOCIATE EDITOR.  
C. C. BUEL,  
ASSISTANT EDITOR.

June 1894

May 17. 1894.

Dear Osborn:

I send you with  
this Martin's book on  
Tesla's inventions and  
writings together with two  
copies of the Century - one  
containing Martin's Biographical  
sketch of the inventor and the other  
Tesla's note on Zmai with my  
"Paraphrases" after his prose translation.

There would be a partic-  
ular appropriateness in Colum-  
bia giving him a degree since his  
first lecture was if I mistake not  
delivered at the College and since  
New York City is the scene of

his  
Cover  
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degree  
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his most important discoveries and of his work for several years past. I hope also that this degree would be commensurate with the recognised importance of the man and his rank in his profession. I think it may truly be said that there are few men occupying the unique position he does in both the theoretical and practical phases of scientific work, and hardly any whose work promises more for the amelioration of the hard conditions of life of the poorer classes. Having seen a great deal of Mr. Tega during the last six months I have been deeply impressed with the scientific and scholarly temperament of the man. I have never heard a subject of a scientific nature mentioned in his presence upon which he did not seem to be thoroughly well informed. As you doubtless know, he is on terms of intimate friendship with Crookes, Helmholtz, Lord Kelvin & others. Herz was his friend. But I need not enlarge on his scientific rank or standing, for they are too well known.

As to his general culture, I may say that he knows the language and is widely read in the best literature of Italy, Germany and France as well as much of the Slavic countries to say nothing of Greek and Latin. He is particularly fond of poetry and is always quoting Leopardi or Dante or Goethe or the Hungarians and Russians. I know



EDITORIAL DEPARTMENT  
THE CENTURY MAGAZINE  
UNION SQUARE NEW YORK

R. W. GILDER, EDITOR.

R. U. JOHNSON,  
ASSOCIATE EDITOR.

C. C. FUEL,  
ASSISTANT EDITOR.

A few men of such diversity  
of general culture, or such accuracy  
of knowledge. He is 'not much in-  
terested in art apparently, but is  
fond of nature'. Most of all he  
is devoted to his profession with an  
intensity I have not seen equalled.

As to his character it is  
one of distinguished sweetness, sincerity,  
modesty, <sup>refinement</sup> generosity and force, as you  
yourself have seen enough of him to know.

Faithfully yours,

R. U. Johnson.

Prof. H. F. Osborn.



The New York Public Library

Astor, Lenox and Tilden Foundations

FIFTH AVENUE AND 42ND STREET

NEW YORK, N. Y. 10018

Leland I. Anderson  
1709 Eldridge Avenue West  
St. Paul, Minnesota 55113

Dear Mr. Anderson:

Your letter of December 6th has come and I wish to reply promptly regarding T. T. Munger, a figure involved in the attempt to secure an honorary degree for Tesla.

This is undoubtedly Theodore Thornton Munger (1830-1910). You will find a biographical sketch of him in The Dictionary of American Biography. It will establish his Yale relationships (Class of 1851, also graduate of its Divinity School) and his influential position as pastor of United Church, one of the three churches which stand on New Haven Green.

A letter to Yale Library would receive a quick solution of Professor Hastings' identity, you may be sure.

Yours truly,

*Robert W. Hill*

Robert W. Hill  
Keeper of Manuscripts





New York, April 10 1893

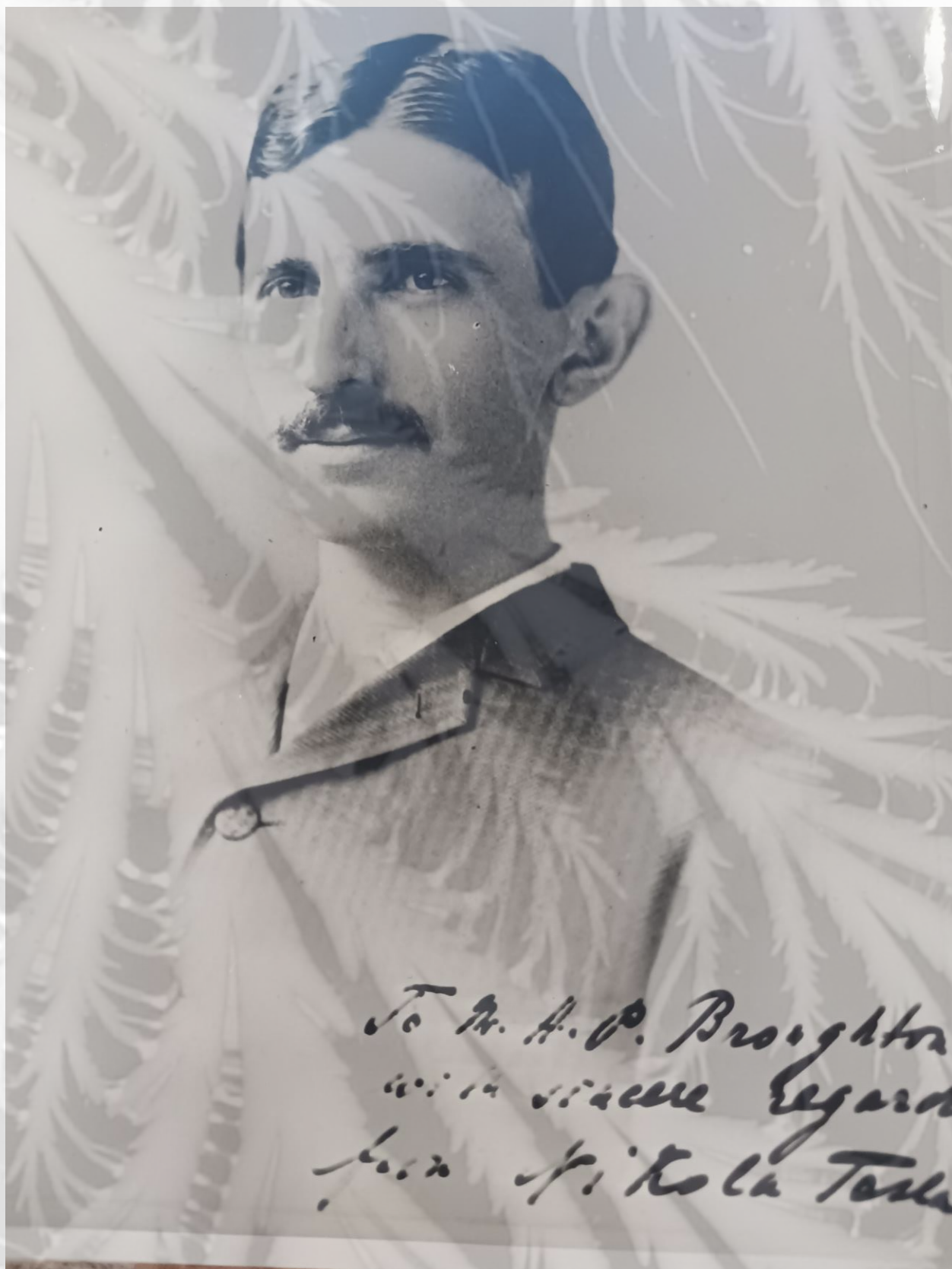
My dear Mr. Broughton,

I need not assure you that  
I feel much indebted to you for  
your valuable help at the occasion  
of my lecture in St. Louis.

I beg you to accept the photo  
which I enclose as a proof  
of my friendly feelings towards  
you.

Yours sincerely  
H. P. Broughton Esq. A. Teila.





To Mr. A. P. Broughton  
with sincere regards  
from Nikola Tesla



THE GERLACH

New York, April 10 1893

My dear Mr. Broughton,

I need not assure you that  
I feel much indebted to you for  
your valuable help at the occasion  
of my lecture in St. Louis.  
I beg you to accept the photo  
which I enclose as a proof  
of my friendly feelings toward  
you.

Yours sincerely

N Tesla.

H. P. Broughton Esq.

(Enclosed photo enscribed "To Mr. H. P. Broughton  
with sincere regards  
from Nikola Tesla")

*(See Webster photo album)*



WM. G. BROUGHTON  
1048 Parkwood Blvd.  
Schenectady, N. Y. 12308

W2IR DEDICATION SPEECH

Wm. G. Broughton, Licensee

Schenectady Museum

Feb. 6, 1976

Eighty-three years ago, in St. Louis, the National Electric Light Association sponsored a public lecture on high-voltage high-frequency phenomena. On the auditorium stage a demonstration was set up using two groups of equipment.

In the transmitter group on one side of the stage was a 5-kva high-voltage pole-type oil-filled distribution transformer connected to a condenser bank of Leyden jars, a spark gap, a coil, and a wire running up to the ceiling.

In the receiver group at the other side of the stage was an identical wire hanging from the ceiling, a duplicate condenser bank of Leyden jars and coil--but instead of the spark gap, there was a Geissler tube that would light up like a modern fluorescent lamp bulb when voltage was applied. There were no interconnecting wires between transmitter and receiver.

The transformer in the transmitter group was energized from a special electric power line through an exposed two-blade knife switch. When this switch was closed, the transformer grunted and groaned, the Leyden jars showed corona sizzling around their foil edges, the spark gap crackled with a noisy spark discharge, and an invisible electromagnetic field radiated energy into space from the transmitter antenna wire.

Simultaneously, in the receiver group, the Geissler tube lighted up from radio-frequency excitation picked up by the receiver antenna wire.

Thus wireless was born. A wireless message had been transmitted by the 5-kilowatt spark transmitter, and instantly received by the Geissler-tube receiver thirty feet away. There was the first public radio communication ever.

The world-famous genius who invented, conducted, and explained this lecture demonstration was Nikola Tesla. (Now here is the punch line.) Tesla's twenty-eight year old assistant on stage was my father.

So, the Museum Memorial amateur radio station W2IR carries the name of a real old timer in ham radio. You all are invited to come see the luxuriant new station facilities the Museum has provided on the second floor over in the front corner.

We've come a long way since 1893!

Thank you.

*WGB*



W2IR  
WM. G. BROUGHTON  
1048 Parkwood Blvd.  
Schenectady, N.Y. 12308

May 2, 1980

Mr. Leland I. Anderson  
2525 South Meade St.  
Denver, CO 80219

Dear Leland:

Your AWA Monograph No. 4, "Priority in the Invention of Radio," is the only publicity I have seen that addresses directly the vital priority aspect of Tesla's inventive genius. I am delighted to have it for our Tesla "Collection of Regional History #2341, Boxes #6 and 83" in the John M. Olin Research Library at Cornell University.

Your Monograph, Martin's book, and others, all mention Tesla's landmark NELA St. Louis lecture in 1893. This is the one during which, and in a week's preparation for, my father acted as Tesla's sole assistant. Many times I have listened to father's glowing accounts of his pleasant association with Tesla in this work. My dedication speech\* touches upon some of the highlights, as I recall them.

It has always piqued me somewhat that Tesla was so magnanimous to George Westinghouse in absolving him from \$1,000,000 or more in patent obligations. In his later distraught financial straits, Tesla could have made good use of this well deserved bonanza.

Congratulations to you for continuing to help build an impeccable documentation to establish in history Tesla's true stature as one of our few top-flight pioneer radio inventors. Father would like that too, and agree with this needed reevaluation of relative prominence of scientists in the earliest days of wireless.

Best regards,

Bill

Wm. G. Broughton

\*Enc,  
"W2IR DEDICATION SPEECH"



5

New York, April 29th, 1899.  
46 & 48 E. Houston Str.

Mr. M. J. Strong, M.D.,  
711 Franklin Str.,  
Philadelphia, Pa.

My dear Sir:-

I regret that under the pressure of my engagements I  
was unable to answer your letter before this.

If you have an idea which appears to be good, I would  
advise you to file a caveat and secure it. I shall only be too  
pleased to offer you my opinion after you have secured yourself.

Believe me to be,

Yours very truly,

*A. Tash*

#### THE CAVEAT LAW

Enabled an American privately to  
disclose his invention. Found  
useless in protecting patents in the  
U.S., and a source of annoyance  
to foreign governments.



To the  
American Red Cross

New York City.

The retrospect is glorious, the prospect is  
inspiring: much might be said of both.  
But one idea dominates my mind. This -  
my best, my dearest - is for your noble cause.

I have observed electrical actions, which  
have appeared inexplicable. Faint and uncertain  
though they were, they have given me a deep  
conviction and foreknowledge, that ere long  
all human beings on this globe, as one, will  
turn the eyes to the firmament above, with  
feelings of love and reverence, thrilled by  
the glad news: "Brethren! we have a  
message from another world, unknown and  
remote. It reads: one ... two ... three ..."

Christmas 1900

Nikola Tesla







New York, Oct. 29th, 1900.

46 & 48 East Houston Str.

Col. J. J. Astor,  
840 Fifth Ave.,  
New York City.

My dear Col. Astor:-

Since I wired you last Friday evening my mind was so much taken up with some thoughts, that I was unable to write, as promised in my dispatch which, I trust, you have received.

You will know that for a number of years, ever since I made my first lecture demonstrations, I have been engaged in the important problem of producing an efficient illuminant. Light is so vital a factor in civilized communities, and the present processes of getting it are so wasteful, and the capital invested in it all over the world is so enormous, that the realization of this task must be considered as one of the greatest benefits which an inventor can confer upon humanity. Lighting by incandescent lamps is an almost barbarous method, inasmuch as we waste ninety-nine and a half percent of the total energy employed; and the arc-lamps, though a little more efficient, are equally, if not more objectionable.

Some time ago an improvement was made by Prof. Nernst, of Germany, who produced an incandescent lamp by coating a wire or filament with some rare oxides. His lamp proved more efficient, and when my advice was asked in regard to it, I recommended it, and it is now being introduced here. Although better than an ordinary incandescent lamp as regards the consumption of energy, it has only a small commercial advantage over the latter on account of some drawbacks, one of which is, that it must be started by an artifice. Besides, the process is still wasteful and the light has the great objectionable features common to other artificial illuminants: It is concentrated, glaring and hurtful to the eyes and is not diffusive, as it should be, like the light of day.

From my first experiments on the world has been looking to me for the production of this kind of light, and you may believe me that, if it could have been obtained by simply trying hard, I would have had it long ago, for this undertaking has consumed much of my midnight oil. The difficulties seemed insuperable, but with the perfection of oscillators I also improved my light, and about two years ago I began to feel sure, that I would succeed in making it commercial. This stage I have finally reached, and when I lighted my laboratory the other evening from a small oscillator, I



saw clearly, that I had developed a system of lighting, with which no other can compete. The light is soft and agreeable to the eye and diffused, just like daylight, penetrating into all the nooks and corners and casting scarcely any shadows. I asked a few persons who had not seen it before, what they thought of it, and each of them independently said, looking around astonished: "It is just like day." This statement is borne out by the fact, that when the lamps are lighted during the day, they can hardly be seen, and yet at night they throw off a flood of rays. This light is also healthful and germicidal and will be an ideal illuminant for dwellings, as well as for streets. The lamps differ from all others, because they never consume, since there is no filament or carbon in them, but only gas inclosed in a sealed glass tube.

The commercial value of this light, if rightly exploited, is simply immense. A hundred great fortunes can be made in introducing it, and you will be convinced of this in a short time, when you see my "artificial daylight" and learn more about it. I am now working out the details of a commercial plant, which I hope to put out, but in view of patent matters I would beg you to keep this information still personal. I am anxious that you should see the light, but please inform me before coming, as otherwise, on account of my absence or some changes that I am making you might miss it.

With kind regards believe me,  
Yours very sincerely,





Rotating  
Galvanometer

NIHIL IN SACCULO QUOD NON FUERIT IN CAPITIS

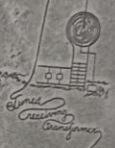
Electrical oscillator activity ten million horsepower



Rotating  
Galvanometer



Power transmission  
without wires



Rotating  
Galvanometer

New York, January 1, 1904

I wish to announce that in connection with the commercial introduction of my inventions I shall render professional services in the general capacity of consulting electrician and engineer. The near future, I expect with confidence, will be a witness of revolutionary departures in the production, transformation and transmission of energy, transportation, lighting, manufacture of chemical compounds, telegraphy, telephony and other arts and industries. In my opinion, these advances are certain to follow from the universal adoption of high-potential and high-frequency currents and novel regenerative processes of refrigeration to very low temperatures.

Much of the old apparatus will have to be improved, and much of the new developed, and I believe that while furthering my own inventions, I shall be more helpful in this evolution by placing at the disposal of others the knowledge and experience I have gained.

Special attention will be given by me to the solution of problems requiring both expert information and inventive resource—work coming within the sphere of my constant training and predilection.

I shall undertake the experimental investigation and perfection of ideas, methods and appliances, the devising of useful expedients and, in particular, the design and construction of machinery for the attainment of desired results.

Any task submitted to and accepted by me, will be carried out thoroughly and conscientiously.

Laboratory, Long Island, N. Y.  
Residence, Waldorf, New York City

Nikola Tesla

Burning atmospheric nitrogen by high frequency discharge of twelve millions volts



Power transmission  
without wires



Rotating  
Galvanometer



Rotating  
Galvanometer

"In connection with resonance and \*\*\* transmission of energy over a single conductor, \*\*\* I would say a few words on a subject which constantly fills my thoughts, and which concerns the welfare of all. I mean the transmission of intelligible signals or, perhaps, even power, to any distance without the use of wires. I am becoming daily more convinced of the practicability of the scheme; and though I know full well that the great majority of scientific men will intensities undreamed of before are now being produced by perfected apparatus of this kind \*\*\* I have produced electrical discharges, the actual path of which, from end to end, was probably more than one hundred feet long; but it would not be difficult to reach lengths one hundred times as great. I have produced electrical movements occurring at the rate of approximately one hundred thousand horse-power, but rates of one, five, or ten million horse-power are easily attainable. The effects were developed."

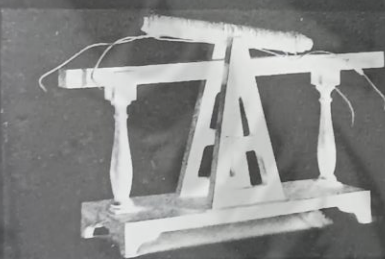


# History of Development and Application of the ELECTRIC MOTOR

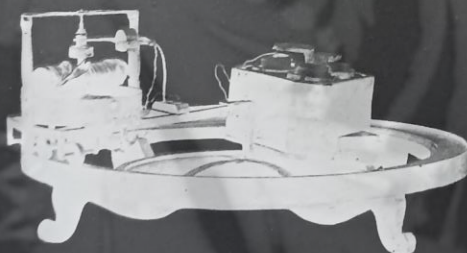
## A Pictorial Tribute to the Pioneer Motor Designers



**1831** One of Faraday's original models used to demonstrate motor action of current-carrying wire in presence of a magnetic field. In 1820, Oersted had related electricity to magnetism by influence of current flow on a magnetic compass needle. Faraday's lines-of-force theory is still a most useful concept, although some would challenge "What Makes a Motor Run" (See ELECTRICAL MANUFACTURING, Jan. 1948, p. 109; March, p. 114; June, p. 102; Sept., p. 89, and December, 1948, p. 196.)



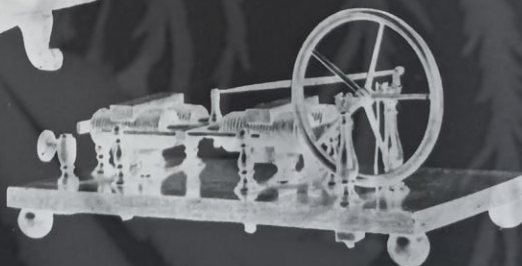
**1831** Prof. Joseph Henry's electromagnetic engine, a "philosophical toy", did no useful work but was the first electric motor. Armature oscillated when coil leads alternately dipped into mercury cups connected to wet batteries, not shown.



**1837** First U. S. patent (No. 132) on an electric motor was issued to Thomas Davenport of Brandon, Vt., on Feb. 25, 1837. Circular railway model shown with battery is now in Smithsonian Institution. This motor has two straight electromagnets, one an armature revolving in a horizontal plane, the other a stationary field connected in parallel. Davenport was not successful in commercializing his invention, although recognized as epochmaking.

One of several types of reciprocating electromagnetic engines developed by Dr. Charles C. Page. This model was patented in 1854 (No. 10,480). In larger sizes these machines developed over 10-hp and were applied to a locomotive in 1851. Between 1837 and 1870 when the dynamo electric machine began to take its modern form, 16 patents on magnetic engines were taken out by American inventors. Abroad, the first electromagnetic machine was built in 1838 by Prof. Moritz-Herman De Jacobi (Russian) to propel a boat on the Volga.

**1854**



ELECTRICAL MANUFACTURING

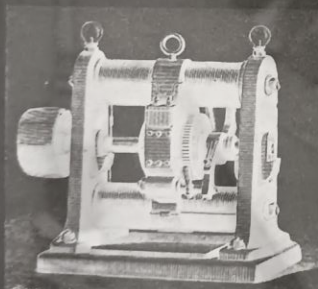


Although its roots go back over 125 years, the practical electric motor is hardly 70 years old; most applications were conceived before 1900.

## *First Attempts to Apply Motors*

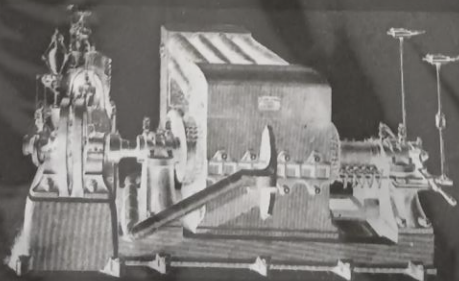
wire carrying current to cut "lines of magnetic force" created by a permanent magnet. It was 40 years before this theory was put to work in the counterpart of the modern dynamo-motor. Early motors operated purely on the attraction and repulsion of electromagnets.

Pacinotti, Siemens and Gramme, all Europeans, with the added touch of Edison, created the basis of the modern d-c dynamo and its motor counterpart. Dr. Antonio Pacinotti of Florence, Italy, in 1860, invented a ring method of armature winding and the modern commutator. Zenobie Theophile Gramme, a Belgian, later adapted Pacinotti's idea and developed a practical dynamo-electric machine, also demonstrated the reversibility of the dynamo as a motor. Werner von Siemens in Germany and his engineer, F. von Hefner Alteneck, invented the drum armature with its coils connected in orderly sequence. Thomas A. Edison, using good magnetic materials, and Siemens drum armature, in 1880 brought out a highly efficient compound-wound generator and motor. Frank J. Sprague, onetime Edison associate, developed the first real commercial motor.



**1870**

Gramme's ring-armature generator, covered by British patent No. 1668 in 1870, was widely copied in this country in generators built as late as 1902. It was patterned after the shuttle wire armature of Siemens (1856) and Pacinotti's commutator.



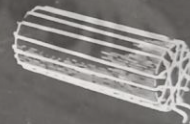
MAY 1949



**1860** Pacinotti machine a forerunner of modern motor design. Armature consisted of an iron ring with 16 teeth between which coils were wound, separated by triangular wood spacers. Coils ends were brought out to commutator made of 16 brass pieces fastened to a wood spool.

Model of Siemens (Altenneck) drum or shuttle wound armature that was used in early Edison dynamos and motors. Wide air gaps resulted from winding wire directly on drum.

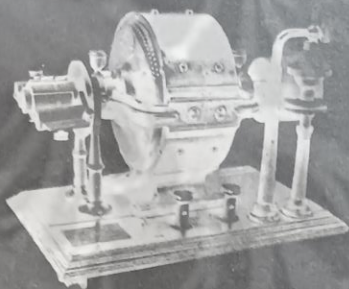
**1872**



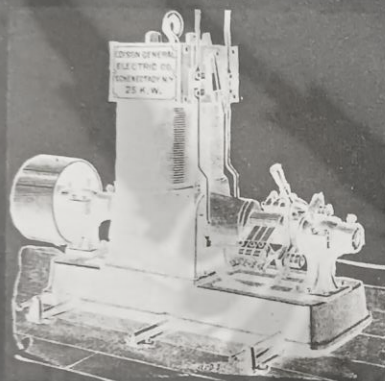
**1884** The Sprague motor was the first practical stationary apparatus designed specifically to convert electricity into mechanical energy, instead of being a converted dynamo. This self-regulating d-c motor had shunt winding and differential series coil; maintained constant speed on constant voltage.

**1882** Central station power is what made the application of motors practical in the home and in industry. Edison's Pearl Street Station in New York was put into operation on Sept. 4, 1882. The dynamo shown was rated at 1200 16-candlepower lamps. It was two years before the first motor was connected to the line.

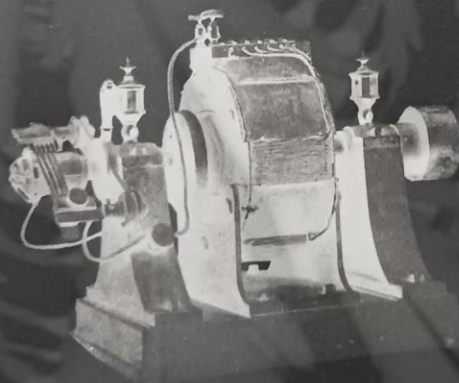




**1876** Small plating dynamo designed by Edward Weston and built by Roberts & Hovel, Newark, N. J., for Condit Hanson & Van Winkle Company. Rated 20 amp, 4 volts. Three-part copper leaf brushes. To prevent field reversal through plating-tank battery action, belt-driven mercury cup contact at right breaks circuit when generator is stopped.



**1892** First motors made by the Edison General Electric Co. were almost identical with the Edison bi-polar dynamo operated as a motor. Produced in sizes from 1/4 to 150 hp, they had automatic starting rheostats and self-oiling bearings.



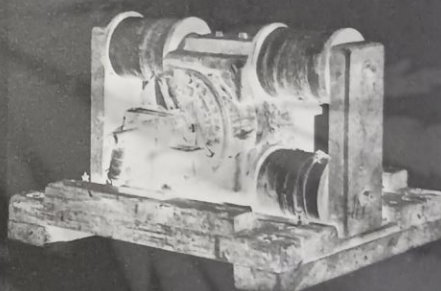
**1887** Elihu Thomson's self-starting repulsion motor (patent No. 363,185) whose fundamental 2-pole form is shown at A, is based on principle indicated at B where coil S connected to an a-c supply exerts a "repelling" effect on

closed coil C. At A, coil C has its two ends shorted through shunt around commutator a. A clearer diagrammatic representation of the motor is given at C where S is the stator winding. The practical form is illustrated at D.

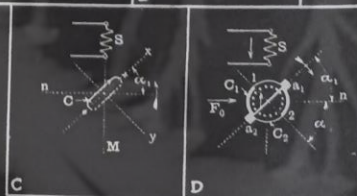
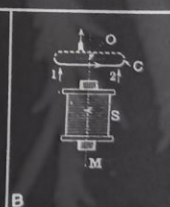
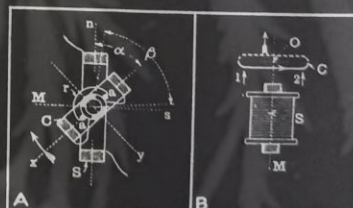
## From D-C to A-C

**1885** Motor designed and built by Charles F. Brush in 1885 was patterned after his dynamo. Had a Pacinotti ring armature with two axial air gaps and used a flyball

governor to shift brush positions to compensate for changes of speed and load. Variations of the Brush dynamo were made by General Electric for many years.



**1878** This early high tension dynamo, made by Prof. Elihu Thomson, was a forerunner of polyphase a-c machines since it had both a-c and d-c characteristics. Its three-phase ring winding on armature would generate a-c when picked up by collector rings, but a-c patent claims were disallowed.

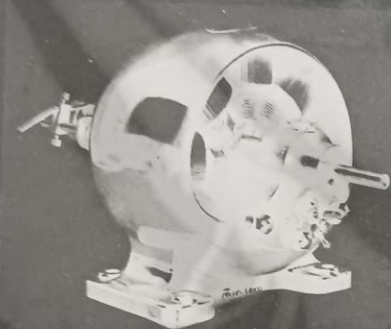
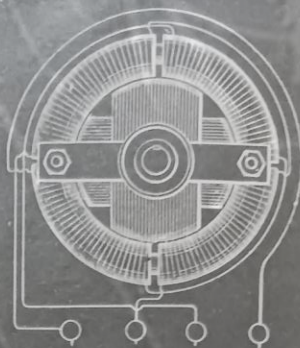




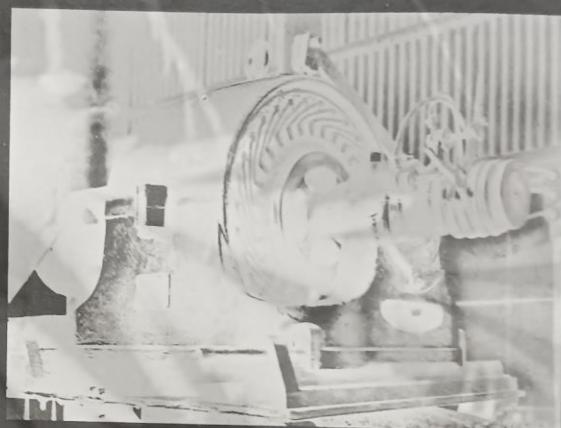
## Basic A-C Types

Sketch at right shows Nikola Tesla's earliest conception of a polyphase induction motor in which he introduced idea of rotating magnetic field. Field was a ring of laminated steel disks with four coils supplied from 2-phase generator through four wires. Coils were connected so as to produce N and S poles on opposite sides of ring. Drum armature was provided with two

closed coils at right angles, with or without external connections (squirrel cage design). Tesla patented several types of single-phase motors. One produced a difference of phase in the field windings by introducing a resistance in one circuit and an inductance coil in the other. He also patented a motor with condenser in armature circuit.

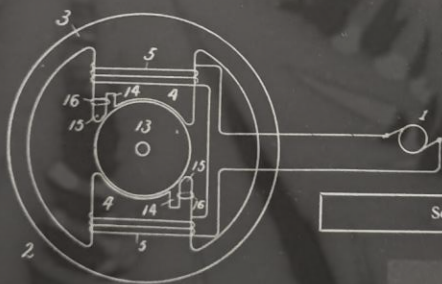


**1892** Early form of 8-pole wound-rotor Tesla motor with leads brought out through hollow shaft to slip rings. This model is from the Westinghouse historical collection now in the Edison Institute, Dearborn, Mich.



**1895** Earliest commercial Tesla type motor developed by Westinghouse engineers is pictured above. Introduced about 1895, this two-phase 200-volt wound-rotor ma-

chine had resistances attached to ends of each stator bar. Manually operated multiple-contact (32) rotary rig was used to short resistances when motor attained full operating speed.



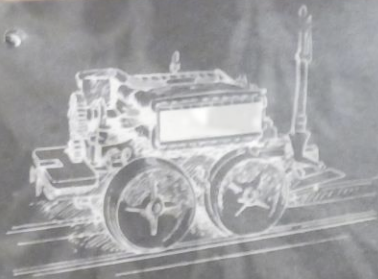
**1895** Patent drawing (No. 534,151) of shaded-pole single-phase a-c motor issued to Robert H. Hassler in 1895 and assigned to Westinghouse.

Sources of pictures are listed in detail on page 194

**1901** One of original 1-hp single-phase capacitor motors built in 1901 by Charles P. Steinmetz of General Electric. It weighed 260 lb. and capacitor, or compensator at right, 85 lb. A modern 1-hp single-phase motor with built-in capacitor weighs about 70 lb. Although a few of these motors were built in 1901, the idea remained commercially dormant for nearly 30 years. Then a number of AIEE papers reawakened interest in this important current type. For modern forms, see page 89.



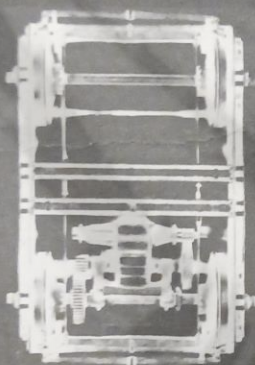




**1879** Siemens & Halske built the first practical electric locomotive. Used 3-hp 150-volt series-wound dynamo, powered through third rail.

Motor used for Edison's experimental locomotive at Menlo Park was based on high efficiency shunt-wound dynamo with low resistance armature and high resistance field.

**1880**



**1887** Truck of first Sprague trolley. It used a 7½-hp 1200-rpm d-c motor of consequent-pole type with drum-wound armature and commutators at each end. Operated at 400 volts, with 12:1 double reduction through rawhide pinions. Ends of motor frame were pivoted on axle.

## Transportation

**D**R. Werner von Siemens of Siemens & Halske, Berlin, was the first to successfully apply a motor in electric traction. In 1879 he demonstrated a 3-hp locomotive pulling a string of cars around a small oval track. A year later Edison built an experimental railway at Menlo Park and although his locomotive never was commercialized, it represented a real advance in motor design. The next few years saw street railways spring up all over the country. The one installed in 1887 by Frank J. Sprague in Richmond, Va., was the first extensive trolley system, although others had preceded him, notably Leo Daft, E. M. Bentley & W. H. Knight, Charles

J. Van Depoele and J. C. Henry.

Siemens is also credited with the building of the first elevator (1880). The driving motor was mounted under the car. Several freight elevators were powered by Sprague motors in 1887. First commercially successful elevator was the Otis worm geared machine introduced in 1889. First automatic a-c elevator was built by Sprague in 1899. The first electric escalator was built by Otis in 1900.

It was not until 1907 that the first application of turbine-electric drives was made to two fireboats by the Manitowoc Dry Dock Co. Within a few years such drives were applied to naval vessels.

An early Otis electric elevator installation. Like predecessor hydraulic types, it was operated by a hand-rope in the car. Drive was by worm gear from a motor made by Rudolph Eickemeyer. Multivoltage speed control by Ward-Leonard system came two years later, when Otis Electric Company was organized to build motors and controls for elevators.

**1890**

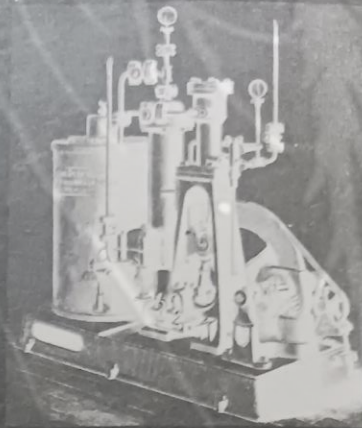
**1915** The "New Mexico" was the first all-electric battleship, from main drives to galley ranges. Its four 7000-hp propulsion motors were supplied from two 15,000-hp turbogenerators. Deck winches for naval vessels had been motorized in 1895; gun turrets in 1896, using Ward-Leonard system of variable speed control (battleship "Brooklyn").





1884

Sturtevant blower driven by a Daft 2-hp three-speed d-c motor (800-2700 rpm). Series field magnets patterned after Siemens, while armature is Gramme ring type. Speed changed by varying resistance in the field. In 1883 Daft motors of 8½-hp were used to run elevators, and a 1½-hp motor of the same type drove a 31x46 Cottrell printing press in 1884.



## Industrial Applications & Mill Drives

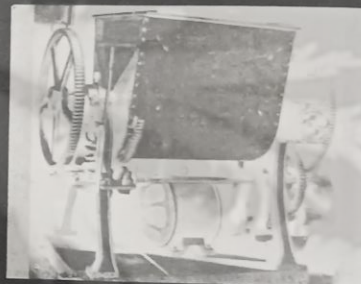
**E**ARLIEST successful application of a motor was to a mine pump drive in South Wales, Great Britain, in 1878. It ran for five years before being replaced by a Siemens. At the Paris Electrical Exposition in 1881 motors were shown driving pumps, rock drills, elevators, railways, machine tools and sewing machines. In the first rush to apply motors, many applications fizzled. At Sermaize, France, in 1879, plowing was done by electricity, anticipating the gasoline tractor. In 1883, a battery-operated Siemens motor weighing 121 lb was geared to a screw propeller for a balloon. Motor driven coal cutters and drills were made in the United States in 1889 but

they were not commercially feasible. Mine hoists were successfully motorized in 1888. Cranes were even earlier applications.

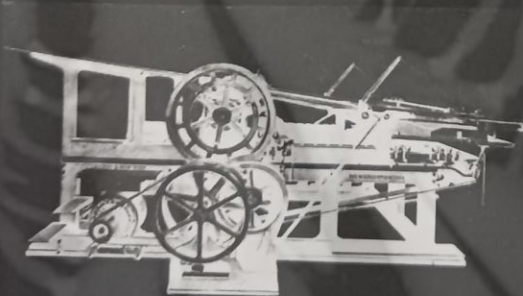
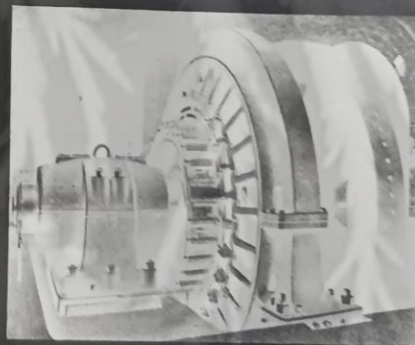
On this page are shown some prototypes of more successful applications.

Sprague motors were applied to looms in 1888 but it was not until 1894 that textile mills were motorized on a large scale, using group drives. In that year fourteen 65-hp G-E induction motors were installed to drive all the machinery in the Columbia (S.C.) Mills. This represented a big advance, as the largest a-c motors made up to that time were 10 hp. Today, most looms are individually motor driven.

**1898** Because commercial ice plants were operated by licensed engineers, the steam engine long held sway as a refrigerator compressor drive. Nevertheless, here is a reproduction of a small 4-ton "automatic" refrigerating machine driven by a bi-polar d-c motor offered by the De La Vergne Refrigerating Machine Co.



**1900** An early dough mixer driven by a 25-30-hp Bullock d-c "protected" motor with manual starter. Screen protection is typical of period.

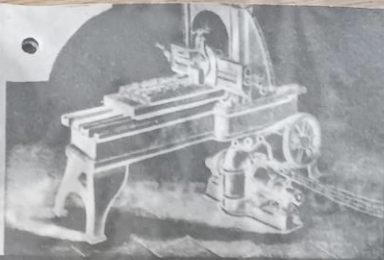


**1895** Motors replaced steam engines for driving printing presses as early as 1883, although Davenport's motor drove a small press experimentally in 1837.

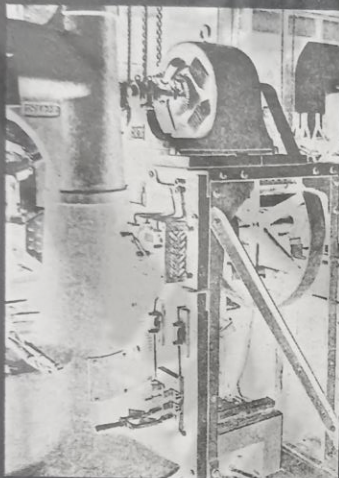
Michle press is shown with belted drive around 1895. By 1897 multipolar slow-speed d-c motors were being built-in by the press builder, with armatures on drive shafts.

**1905** While electric motors had been used in steel mills for cranes and table drives in the 90's, the first rolling mill drive was not installed until 1905. Photo shows one of two Westinghouse 1500-hp d-c motors driving rail mill at Edgar Thomson Steel Works.





**1888** Early metal working planer driven by Sprague automatic motor. From an early advertisement (1888) of Sprague Electric Railway & Motor Co. in "The Electrical World".



**1890** In 1890 Baldwin Locomotive Works motorized its entire erecting shop. Steel frames were constructed to support motors, such as this 4-kw Gibbs d-c motor seen driving a Bement-Miles radial drill.



**1896** Early portable drill for countersinking flush rivet holes in structural iron. Driven by Bullock Type B d-c motor of 5 to 10-hp, with magnetically latched manual starter mounted on top of frame. Coolant tank added weight to worker's thrust.

## Machine Tools

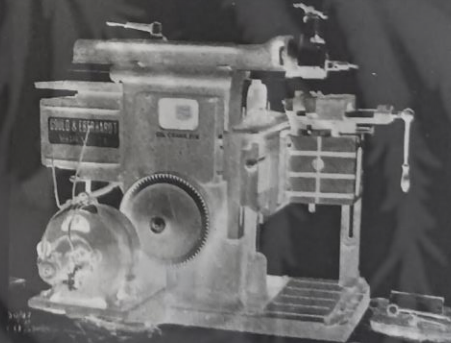
FIRST applications of motors to machine tool drives were on a change-over basis. A few scattered instances of applications of Sprague motors to lathes were recorded in the Boston area in 1886. First instance on record of a shop electrically equipped throughout was the Baldwin Locomotive Works in Philadelphia in 1890. Besides four cranes, machines equipped with individual motor drives included horizontal and vertical boring mills, cylinder borers, multiple-spindle drills, radial drill, 90-in. lathe, three 84-in. wheel lathes, four planers, the largest with 36 ft table, a shaper and three locomotive frame slotters. Most of the motors were Gibbs d-c shunt-wound machines rated from 4 to 14 kw. One 20-hp U. S. motor drove the biggest planer.

The Westinghouse plant at East Pittsburgh was probably the first to be driven by polyphase a-c motors (Tesla) at the turn of the century. General Electric was also among the first to adopt individual motor drives to machine tools in its own shops.

Published records of designed-in motor drives go back to 1896

and 1897. These included portable milling machines, drilling machines, horizontal boring and milling machines and cold saws. Some motors were flange mounted. Motor-driven shapers were introduced in the fall of 1898. A number of motor-driven lathes were illustrated around 1900, including large size gun lathes. A gearless motored headstock lathe was built in 1901. Motorization of individual movements to planer table, rail and heads is noted in 1902. As early as 1899, the growing tendency to direct-connected motors and machine tools was noted, although twenty or more years were to pass before such practice became general.

Multi-motored machine tools were made almost 50 years ago (see Newton cold saw). A giant Bement planer, with 60-ft bed, built in 1907, had five motors totalling 207½-hp, including 100-hp main drive motor and 50-hp motor driving a slotter on the cross rail. Air compressor for clutches was driven by separate 30-hp. motor. Electric planer drives using variable voltage control systems and reversing motors are now well established.

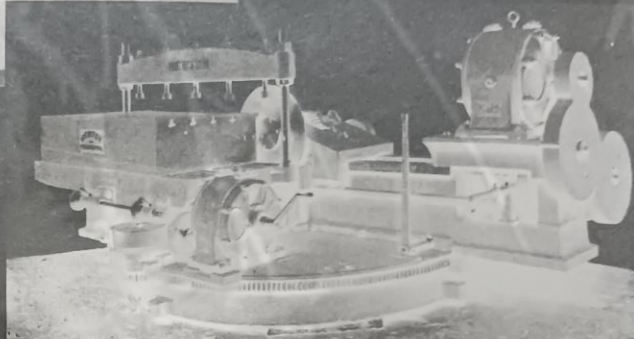


**1897** Earliest application of motor drive to a 16-in. Gould & Eberhardt shaper. Sprague d-c shunt-wound motor was geared directly to bull gear. Cone pulley drive machines were made up until 1919, single pulley driven machines until about 1940.

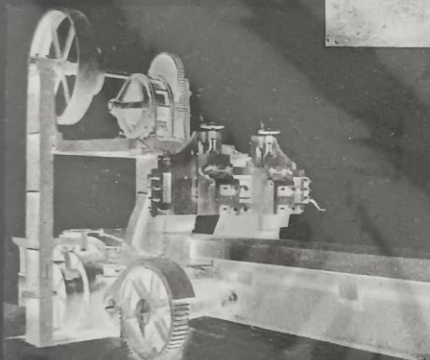




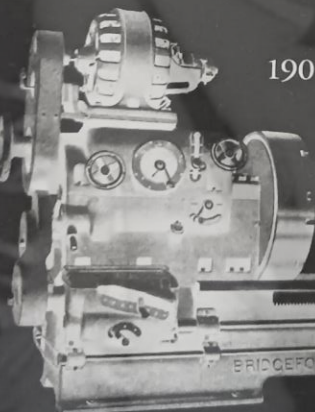
**1908** Largely because of the power requirements, heavy duty machinery for railroad shops was first group of machine tools to be equipped with individual motor drives by the manufacturer. Typical example is this Niles 80-in. locomotive driving wheel lathe driven by a 50-hp, 220-volt d-c, 500-1000 rpm G-E motor. Prior to 1908, machines had been built using open type motors.



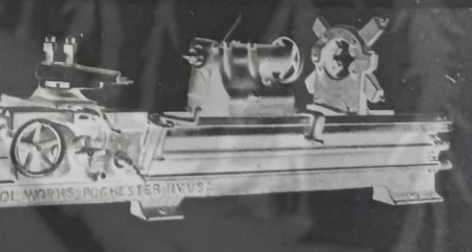
**1900** Newton universal type cold saw cutting-off machine, driven by two Westinghouse Type C a-c crane motors covered by Tesla, Lamme, Westinghouse and Nolan patents. Drive motor 5-17-hp at 1000 rpm; index motor 3-5-hp at 800 rpm. Introduced in 1897, the Type C induction motor had a rotating squirrel cage secondary and gave high starting torque, with running slip of 3-4 per cent. It was also the first motor to use an autotransformer for starting.



**1906** First attempts of manufacturers to motorize planers led to motor geared to jackshaft which was belted to conventional forward and reverse pulleys. On larger planers, a separate motor was added to power rail elevation, and in one of the largest machines built by the Bement Works in 1907, five functional drive motors were built-in.



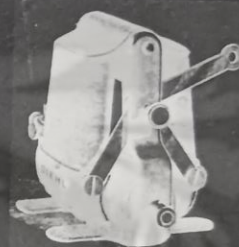
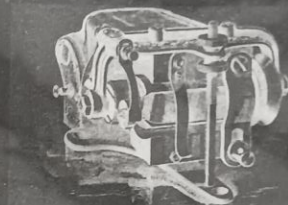
**1900** Bridgeford 36-in. geared head engine lathe driven by 20-hp, 715 rpm a-c motor. Built about 1900. It was not until about 1923 that motor headstock drives were applied generally to standard engine lathes of 12 in. to 20 in. swing over the ways.





## Domestic Appliances

**1882** First home appliance to be motorized was the sewing machine as the above print from the Scientific American of 1882 shows. "Double induction" motor right was the invention of William W. Griscom of the Electro Dynamic Company and was applied to both sewing machines and dental drills. Battery operated, this efficient little d-c motor took its name from the observation that if the field were left open and the armature energized, motor would rotate slowly; with field shorted, motor would speed up. Griscom surmised that currents of induction developed in the shorted field polarized the fixed magnet continuously. This  $\frac{1}{2}$ -hp motor had an armature encased by a cylindrical electromagnet (Siemens ring winding), while the field consisted of a soft iron cylinder wound with two large ring coils.



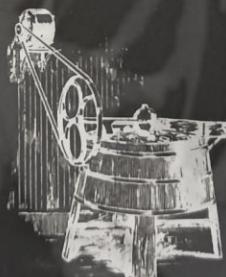
**1884** (Above) Variable-speed sewing machine motor designed by Philip Diehl in 1884 in which speed was controlled by varying the air gap. Base carries upper core and pole of field magnet attached to it, while lower pole piece is hinged at rear and is pulled away

from armature by treadle. Armature is of the Siemens H-type. At right is a variation of Diehl variable air-gap motor, only 5 in. high, operated off a battery.

**1886** At left is another early sewing machine driven by a 6-volt battery-operated motor made by Curtis, Crocker Wheeler Co.



**1889** First ceiling fan patented in 1889 by Philip Diehl. Decorative frame carried grease lubricated ball thrust bearing which supported fan weight. Speed for 3-ft. blades, 200 rpm. Later, in 1895, Diehl patented a fan with blades arranged inside rotating-ring armature and field magnet outside it.

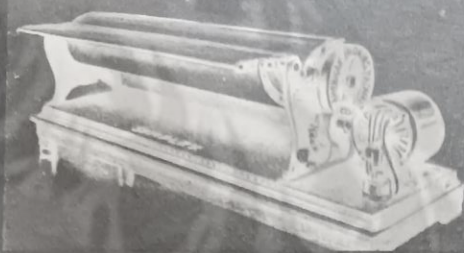


Adaptation of motor drive to wash tub, circa 1908 above, using Emerson  $\frac{1}{4}$ -hp, 104-115 volt a-c motor. Early Thor washer in 1914 was driven by Crocker-Wheeler  $\frac{1}{4}$ -hp, 115-volt, 1720 rpm d-c shunt motor, direct connected.

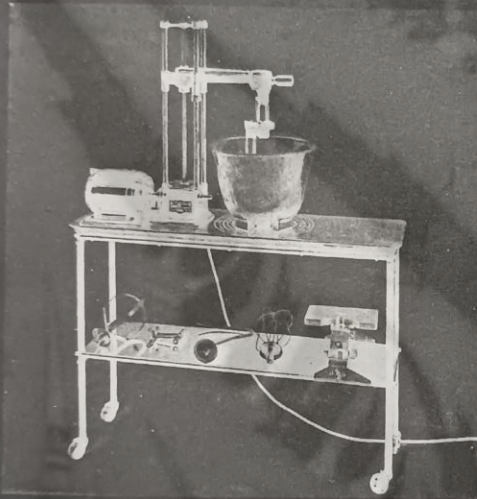


**1914**

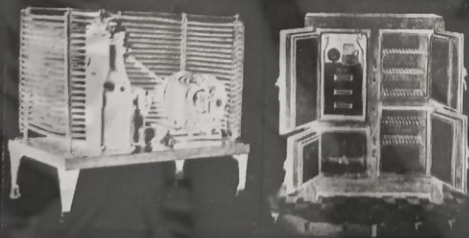




**1908** Three years after the first Simplex hand-operated, gas-heated ironer was introduced in 1905, a direct motor driven ironer with either gas or electric heat was developed. Drive was from a Reynolds  $\frac{1}{8}$ -hp, 1725 rpm anti-clockwise motor driving through grooved friction pulleys. In 1907 a belt driven model was offered that often was connected to the same utility motor used to drive the first electric clothes washing machines.



**1916** What is believed to be the first electric food mixer, placed on the market in 1916, was this Reco electric kitchen power unit. Driven by a Reynolds  $\frac{1}{8}$ -hp, 1750 rpm motor, it used the high speed shaft for cutlery grinding wheel, and vertically adjustable 92-rpm driving arm for mixing batter or driving conventional hand-type meat grinder, coffee mill or ice cream freezer. Table measures 35 by 10½ in.



**1916** Pioneer Kelvinator refrigerator compressor unit used to supply brine tank in ice-refrigerator cabinet. Model shown was produced from 1916 through 1920. Coils are cut away to show 2-cylinder compressor driven by flat belt from  $\frac{1}{4}$ -hp repulsion-induction motor. In 1924 Kelvinator introduced a self-contained unit, with motor-compressor in bottom of cabinet.

MAY 1949



**1908** Original Hoover vacuum cleaner introduced in 1908 and the latest Hoover Junior apartment house model brought out last fall. First model weighed 40 lb. and was driven by  $\frac{1}{8}$ -hp motor at 1750 rpm, either a split-phase induction motor or a 4-pole universal type. Latest model weighs less than 14 lb. The influence of the industrial designer is plainly seen in new model.



**1927** First hermetically sealed domestic electric refrigerator unit introduced in 1927, with the familiar General Electric monitor top cabinet seen above. Motor was  $\frac{1}{8}$ -hp and box capacity was 3½, 5½ and 7½ cu. ft.



## More Early Motor Types

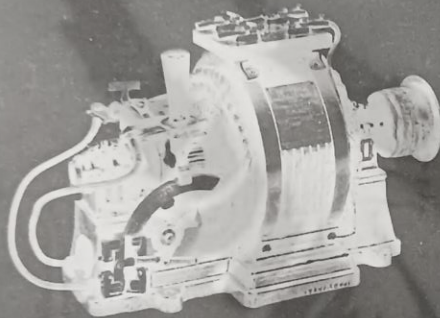


**1886** Many and strange were the forms of early d-c bipolar motors. This one was made by the Eddy Electric Mfg. Co. of Windsor, Conn. Eddy also made dynamo-electric machines for Mathor Electric Co. Eddy motors were advertised as "the highest efficiency." An upside down version of the Eddy motor was built about the same time by Westinghouse.

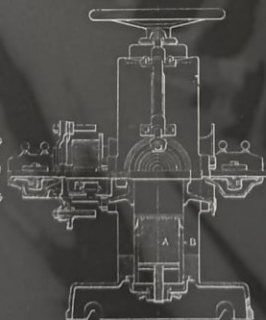
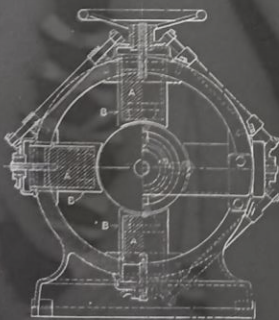
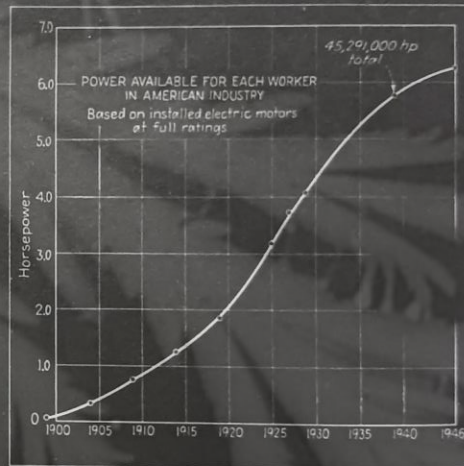
By 1900 virtually all the basic types of motors had been invented. Later developments in motors were largely mechanical refinements and improvements in materials. These included the substitution of silicon steel for soft iron laminations, anti-friction bearings for sleeve bearings; adoption of pressure and die cast rotors of aluminum or copper for squirrel cage rotors; totally enclosed and explosion proof construction, use of new insulating materials including thermoplastic coated magnet wire and inorganic insulating materials, also welded steel frames in place of cast iron, although the latter is still used.

First motor standards were issued in 1913 by the Electric Power Club, predecessor of the National Electrical Manufacturer's Association. NEMA motor and generator standards now fill a 217 page book.

In 1886 there were 5000 motors in use, 1000 of them driving sewing machines. Accompanying table shows installed electric

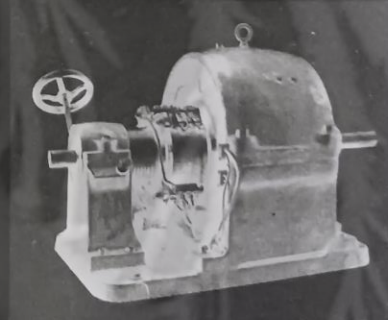


**1895** This 3/4-hp Emerson motor is another early single-phase repulsion-start, induction run motor (see p. 78) with manual brush shifting device. When hand lever was moved to "start", brushes contacted commutator. After motor reached normal speed, moving lever to extreme right cammed brushes off commutator.



**1898** Pole pieces of Stow variable-speed shunt-wound motor were made hollow and provided with plunger cores adjusted radially with respect to armature by means of handwheel and screw. Withdrawing plunger increased air gap and reluctance and hence speed of rotor.

dically with respect to armature by means of handwheel and screw. Withdrawing plunger increased air gap and reluctance and hence speed of rotor.



**1906** Another type of variable-speed d-c motor. In this 10-hp, 150-1200 rpm Reliance motor, stepless speed adjustment was obtained by shifting armature axially with respect to center-line of field poles.

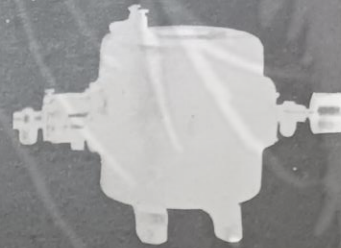


motor horsepower in industry in 1939, last census year, while the chart traces the growth of installed motor horsepower per industrial worker. In the average home 11 motors remove drudgery of household tasks. In 1948, a total of 844,693 integral horsepower motors were produced by NEMA member companies, plus 13,269,323 fractional-horsepower types.

#### Electric Motor Power Installed in Various Industry Groups, Driving Production Machinery\*

GROUP	INDUSTRY	ELECTRIC MOTORS AGGREGATE HP.
1.	Food and kindred products	4,652,156
2.	Tobacco manufactures	80,661
3.	Textile-mill products and other fiber manufactures	3,184,229
4.	Apparel and other finished products made from fabrics and similar materials	231,806
5.	Lumber and timber basic products	1,709,125
6.	Furniture and finished lumber products	940,288
7.	Paper and allied products	3,498,419
8.	Printing, publishing, and allied industries	763,903
9.	Chemicals and allied products	2,932,044
10.	Products of petroleum and coal	1,770,365
11.	Rubber products	983,332
12.	Leather and leather products	416,122
13.	Stone, clay and glass products	2,991,046
14.	Iron and steel and their products, except machinery	12,348,399
15.	Nonferrous metals and their products	1,553,990
16.	Electrical machinery	1,016,877
17.	Machinery (except electrical)	2,746,416
18.	Automobiles and automobile equipment	2,231,363
19.	Transportation equipment except automobiles	826,261
20.	Miscellaneous industries	412,517
Total		45,291,319

\*Latest figures available are from 1939 Census of Manufactures, U. S. Department of Commerce.



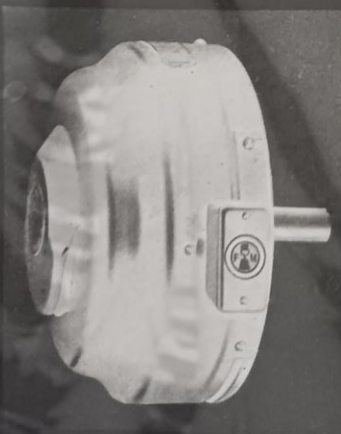
**1899** Paragon d-c bipolar motor with barrel-type frame, built by George C. Towle Mfg. Co. Rated at 1/2 hp, 110 volts. Now in Edison Institute.



**1908** Fairbanks-Morse in 1908 introduced a complete line of ball-bearing induction motors ranging up to 60 hp at 1750 rpm. Electro Dynamic Works had applied ball bearings to a few d-c motors the year before. Winding had cast copper end rings.

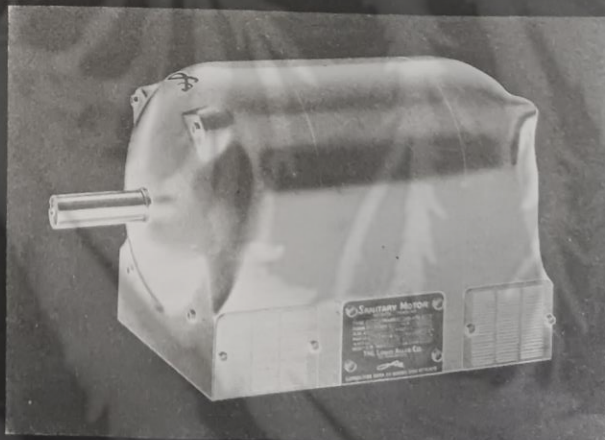
### ... And Some Late Models

Axial air gap motor introduced by Fairbanks-Morse in 1948. Rotor with skewed cast copper windings is same diameter as stator.



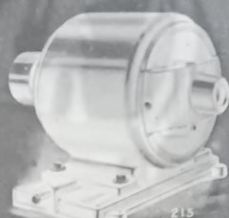
Sanitary motor made by Louis Allis Co. represents ultimate in "streamlined" design to eliminate dirt-catching pockets

and permit hosing down when used to drive machinery in dairies and food processing plants. Base is entirely closed.

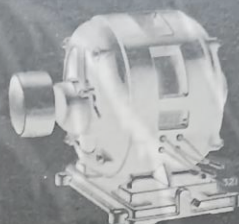




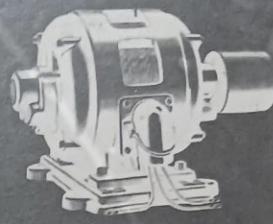
## Refinements in Motor Design



1910



1913



1923

### Cast Iron Era of Motor Frames

These three Robbins & Myers motors are all 5-hp, 60-cycle polyphase induction motors, the first two at 1750 rpm, the last at 1200 rpm.

Today's motor of the same frame size is approximately 40 lb lighter due to use of steel for frames and less bulky windings.

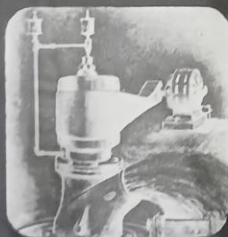
## Evolution of Motors for Deep Well Pumps

**F**ORTY YEARS AGO deep well pumping was stimulated with the advent of high speed turbine centrifugal pumps designed for installation in drilled wells, replacing the old fashioned plunger pump. To develop arid ranch lands in Texas and California water had to be lifted several hundred feet and in huge volumes. Turbine pumps required high speed motors capable of operating uninter-

ruptedly in torrid temperatures. The first motor applications were the standard horizontal types, belted to the pump head. Then the motors were turned up on end with a flexible coupling connection to the pump shaft. Finally a hollow shaft design was adopted, permitting the motor to be down in and the thrust bearing relocated in the motor.

Little attempt was made to integrate the motors with the pump design until around 1930. At that time development of a motor with protecting canopy by U. S. Motors gave rise to turbine pump manufacturers to improve the lines of their pump heads to correlate with the motor. Motors ranging from 5 to 500 hp are being used for deep well pumping.

Over-all efficiency of deep well pumps and motors have been increased to 80 per cent or better by elimination of belts, improved electrical design, precision machining, use of ball bearings and better lubrication.

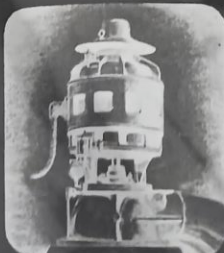


1908

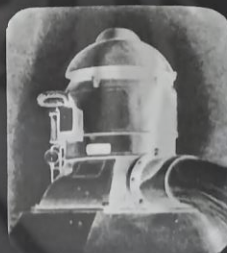
With advent of deep well pumping, original "U.S." motors were open horizontal type, with quarter-turn belt drive.



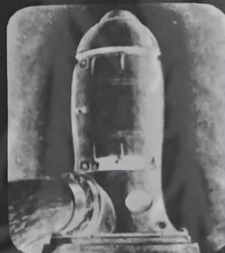
1916 Modified direct-connected motors with feet or base were introduced to eliminate belts.



1922 Introduction of hollow-shaft eliminated necessity of flexible coupling. Thrust bearing at top.



1930 Streamlining and protection of motor against weather was introduced in the early thirties.



1949 Final development of the "verti-closed" type has added the ultimate in streamlining.

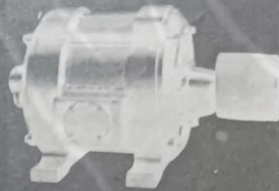




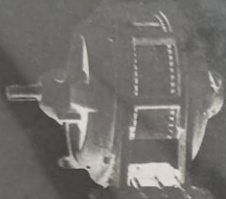
1898 — 5 hp



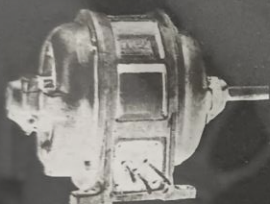
1914 Burke 25-hp, 865 rpm, 3-phase induction motor shows cast iron frame construction typical of this period.



1919 Typical of the swing to welded steel frame design in the period from 1919 to 1936 is this Burke 5-hp. induction motor.



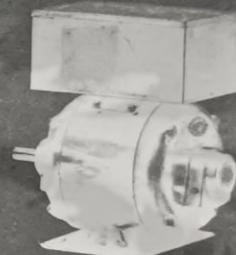
1914 —20 hp



1923 —25 hp



1949 Clean cut design of the modern motor is typified in the welded steel frame construction of this Burke NEMA 284 frame size motor.



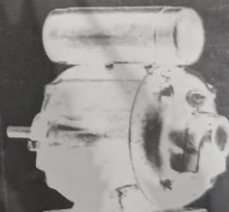
1933



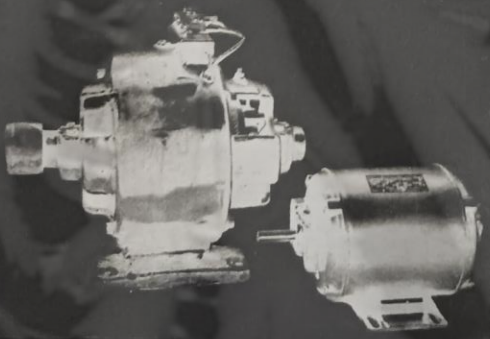
1949 —60 hp

Size and rating comparison of early and modern motors. The vertical row of motors to the left are approximately the same size.

When first built, the condenser for a single-phase capacitor motor was as big as the motor (see p. 79). After these motors were commercially rejuvenated in the early '30's, rapid progress was made in reducing the capacitor size. Pictures at right show results of five years of design effort on General Electric ¾-hp motors for 25-cycle circuits.

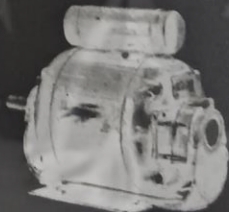


1935



## 1896 VS 1948

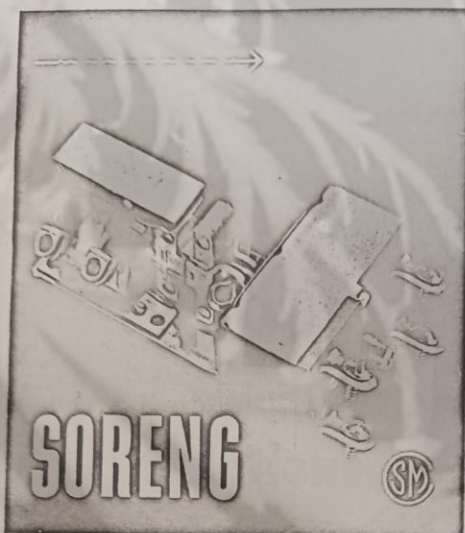
These two motors are both 1½-hp 1725 rpm single-phase motors for operation on 60-cycle circuits. At left is a Pillsbury-Schwedtmann 1896 design standing 12¼ in. high and weighing 150 lb. Modern Wagner version, 7¼ in. high, weight 32 lb.



1938

LES,





## Solenoid-operated switch

Controlling two separate but synchronized electrical circuits, this new SORENG Solenoid-Operated Switch has many applications for clothes dryers and other household appliances—in addition to other applications of a wide variety.

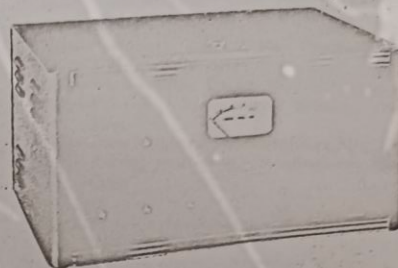
It is a double-pole, single throw, "normally open" switch with double-break contacts in each circuit. With the powerful SORENG TT type solenoid as the "make-and-break" actuating device, high contact pressures can be maintained in the switch. In fact, this solenoid-operated switch has been tested with 25 amperes at 250 volts A.C., and after 100,000 actuations was in perfect working condition.

Designed to make and break two circuits at the same time, the switch is available in the "normally open" type, and with minor changes can be supplied in the "normally closed" type. Additional information will be furnished if desired. When requesting, refer to Department M95.



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to the average frequency in percentage, with three scale ranges: 0.3, 1.0 and 3.0 per cent. It responds to rates from 0 to 200 cycles. Wow components are indicated



*New analyzer designed by Amplifier Corp. of America, New York, measures flutter, wobble and drift to standards set up by SMPE.*

by the amplitude of pointer swing. Drift is observed by gradual sliding up and down the scale of combined flutter and wow reading. Hum, noise switching surges and other transients have no effect on readings. □ □ □

## History of Development and Application of the Electric Motor

See pages 76 through 89

### Picture credits and source data

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- 1831—Faraday's model. ELECTRICAL MANUFACTURING
- 1831—Prof. Henry's machine. Smithsonian Institution
- 1837—Davenport model. Smithsonian Institution
- 1850—Page's motor. Smithsonian Institution

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- 1860—Pacinotti machine. "The Electric Motor and Its Application," T. C. Martin, Joseph Wetzler, 1895, W. J. Johnson Co.
- 1870—Gramme machine. General Electric Co.
- 1872—Drum winding. "Menlo Park Reminiscences," Francis Jehl, Edison Institute
- 1892—Edison General Electric motor. "The Electric Motor," Martin and Wetzler
- 1884—Sprague motor—Edison Institute

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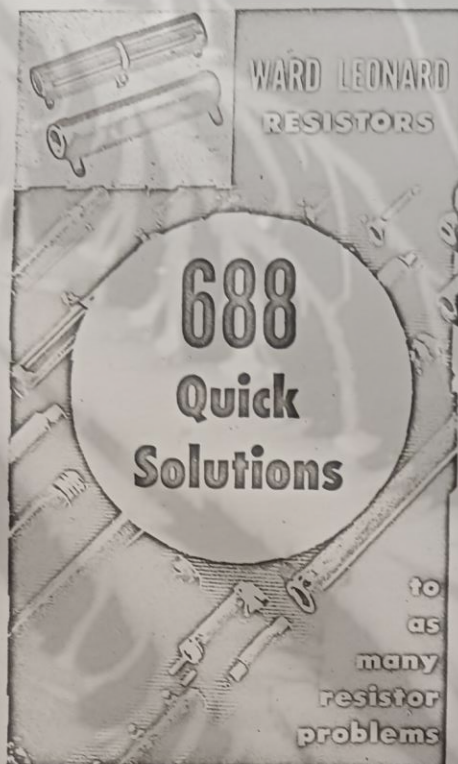
- 1876—Plating generator—Hanson-Van Winkle-Munning Co.
- 1885—Brush motor—"The Electric Motor and Its Applications," Martin and Wetzler
- 1892—Edison General Electric motor. "The Electric Motor," Martin and Wetzler
- 1878—Thomson generator—General Electric Co.
- 1887—Thomson repulsion motor. General Electric Sketches from "Alternate Current Commutator Motors," W. A. Flynn, 1906

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- 1888—Tesla's model. "Inventions, Researches of Nikola Tesla," T. C. Martin
- 1892—Tesla motor. Edison Institute
- 1895—Induction motor. Westinghouse Electric Corp.
- 1895—Shaded pole motor. Patent drawing
- 1901—Capacitor motor. General Electric Co.

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1880—Edison locomotive. Edison Institute  
1887—Sprague trolley. Julian K. Sprague  
1890—Otis elevator. Otis Elevator Co.  
1915—"New Mexico." New York Public Library

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1900—Dough mixer. Allis-Chalmers Mfg. Co.  
1905—Rolling mill drive. Westinghouse Electric Corp.

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1890—Baldwin shops. American Machinist, July 14, 1898  
1896—Portable drill. Allis-Chalmers Mfg. Co.  
1897—Shaper. Gould & Eberhardt

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Type C motor. Westinghouse Electric Corp.  
1906—Planer. Niles Tool Works Co.  
1900—Lathe. Consolidated Machine Tool Corp.

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1886—Sewing machine. Crocker-Wheeler Electric Mfg. Co.  
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1908—Fairbanks, Morse & Co.  
Late models. Fairbanks, Morse & Co.; The Louis Allis Co.

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1908-49—Deep well pumps. U. S. Electrical Motors, Inc.

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1898 to 1949—Size and rating comparison. General Electric Co.  
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1896 vs 1948—Single phase motors. Wagner Electric Corp.



ELECTRICAL MANUFACTURING

May, 1949

"History of Development and Application of the ELECTRIC MOTOR"  
A Pictorial Tribute to the Pioneer Motor Designers







W. W. Welke

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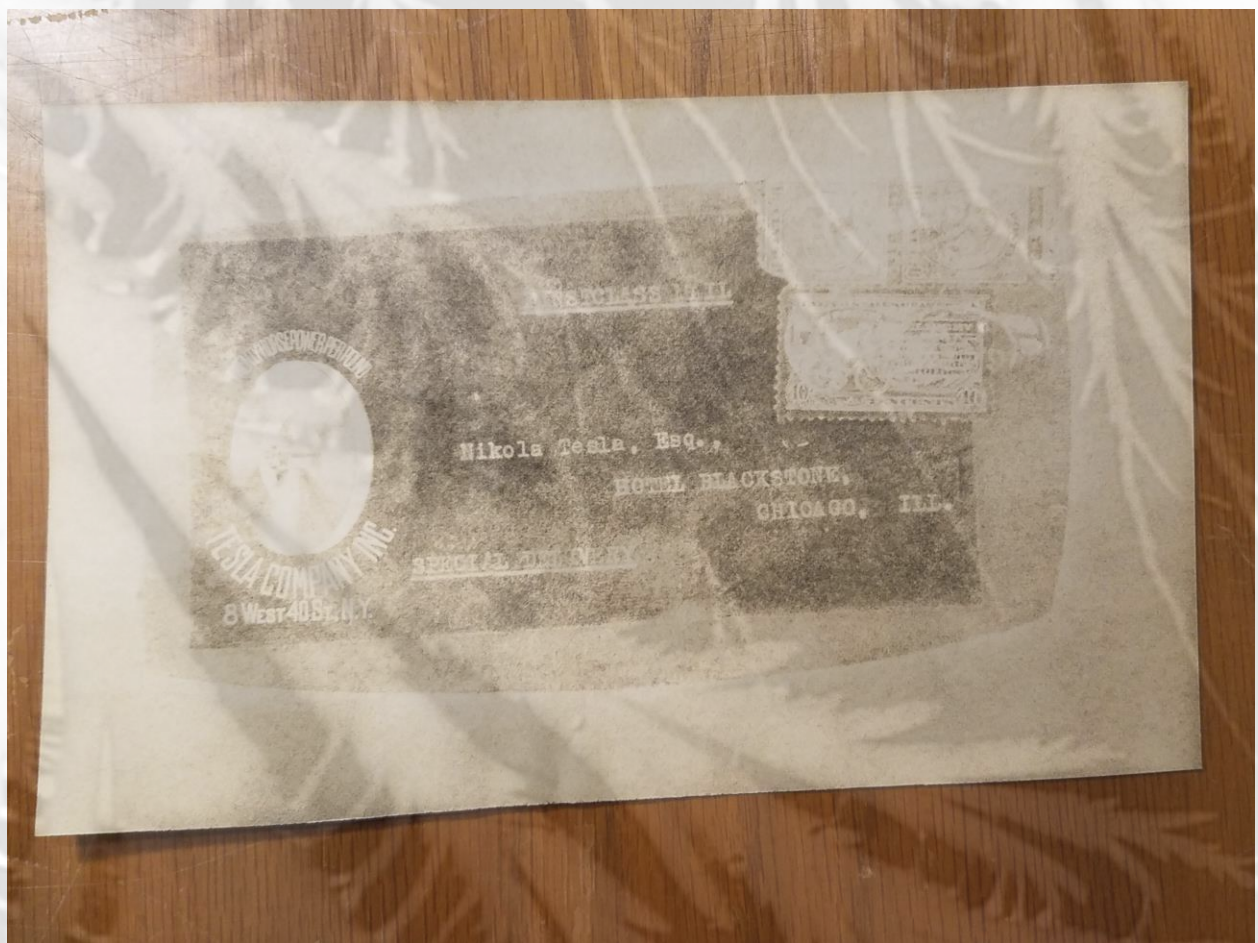
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This is Tesla's hand  
writing & sketching

W. W. Welke







by the world's brightest minds, and the ends which they have in view are generally pretty clearly foreseen. Accidental discoveries will often be made while in pursuit of a particular idea or invention, and these may be set down as among the fortuitous inventions of the present age.

Prior to the present century of material progress and invention the great discoveries were nearly all the products of chance observation. The story of the boy watching the steam forcing up the lid of a cooking vessel, which suggested to him the power of steam, and the account of Newton establishing the existence of gravitation through the falling of an apple, are familiar popular illustrations of how the great discoveries of the past were made in an accidental manner. Faraday, the great scientist and inventor, himself confessed that the fortuitous discovery made by rubbing a piece of amber released "an invisible agent which has done for mankind far more wonderful things than the genie of Aladdin did or could have done for him." The discoverer of gunpowder was as much startled by what he had done as the world which soon heard of it. A child actually first discovered the magnifying power of two lenses placed at certain distances apart, and its father, being an optician, took the suggestion up and produced the first telescope out of a tube of pasteboard. The manufacture of leaden shot by dropping molten lead from a high altitude was discovered by chance, and Arkwright obtained his idea of spinning by rollers by chance observation.

The list of ancient discoveries and inventions produced fortuitously could be extended indefinitely, and even those of modern times produced accidentally would make a formidable list. But most of these latter were also directly attributable to the genius and hard work of the inventors. Thus Professor Roentgen would

never have discovered his marvelous X-rays had he not been experimenting in a dark room with a Crooke's vacuum tube. Neither would Edison have invented the phonograph had he not experimented over and over again with the telephone, which one day accidentally set him thinking when the vibration of his voice had sent the fine steel point of the mouthpiece into his finger.

The modern inventor and discoverer of new laws of the material and mechanical world is a man who pursues his profession with the same steadfast purpose that a physician or lawyer devotes to his calling. The day of the purely fortuitous invention has mostly passed. Even the inventor of the small things which amuse or supply a long-felt want is usually one who has devoted years to the study and experiment of certain lines of work. The inventor of the simple puzzle called "pigs in clover," which had a remarkable run and netted a small fortune to its discoverer, spent nearly a lifetime in making popular games and puzzles before he hit upon the thing that made his reputation. He was a genius in this particular line, and he applied himself assiduously to the invention of new games and toys. Sam Lloyd, according to his own account, studied mechanics in all its branches, and, while gifted with certain ingenuity which enabled him to see patentable ideas, he pursued his studies as steadily and persistently as if he were working out a mathematical demonstration.

Modern inventing has become a profitable and lucrative profession for those who have the inventive faculty and the willingness to pursue it as others do a business or practice. The world owes much to the inventors of the age, but if our life and method of living have been revolutionized and improved by their ideas their rewards have been ample. The successful owner of a popular patent receives remunerations that are



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C O P Y.

Tesla Laboratory.  
Long Island, N. Y.

New York, June 24, 1908.

Edward W. Whitaker, Esq.,  
Patent Attorney,  
Washington, D. C.

My dear Sir:--

I regret very much that your communication containing the enclosed clippings has been overlooked. Permit me, at this late date, to thank you for the expression of your appreciation.

The efforts of Loomis in wireless telegraphy may have been the first in this country, but not abroad. The records show many anticipations in France and England.

The devices used until quite recently were, however, for all practical purposes, worthless. Neither Marconi or anybody else has succeeded in transmitting a message to any appreciable distance without the use of my apparatus. Last October the Hertzian appliances were abandoned and my apparatus substituted and the messages were, of course, easily transmitted. There is nothing particularly meritorious in the attempt, however, for I have already in 1899, as you may see from my patent of April 18, 1905, passed a heavy current around the earth (over 100 amperes) and excited the planet resonantly.

As a matter of fact, to transmit wireless messages, telegraphic or telephonic, under practical conditions and to appreciable distances, five of my discoveries are necessary:

First, my method of oscillatory conversion by means of condensers; second, the so-called "Tesla transformer"; third, my apparatus for the transmission of energy without wire, comprising grounded, resonant circuits; fourth, my methods and apparatus for individualizing signals, and, fifth, my discovery of the stationary waves.

Believe me,

Very truly yours,

N. Tesla.